

7 FORECAST TEXT PRODUCTS

7.1 Area Forecasts (FA)

An Area Forecast (FA) is a forecast in an abbreviated plain language of specified weather phenomena covering a flight information region (FIR) or other area designated by the meteorological authority. The Area Forecast (in conjunction with AIRMETs, SIGMETs, Convective SIGMETs, CWAs, etc.), is used to determine forecast en route weather and to interpolate conditions at airports which do not have a Terminal Aerodrome Forecast (TAF). As such, it serves as a flight planning and pilot weather briefing aid for use by general aviation pilots, civil and military aviation operations and Federal Aviation Administration (FAA) weather briefers.

Note...Hazardous weather (e.g., IFR, icing, turbulence, etc.) meeting [AIRMET](#) or SIGMET criteria are not forecast in the CONUS or Hawaii FAs. Valid [AIRMETs](#) and SIGMETs must be used in conjunction with the FA to determine hazardous weather information for the flight.

All Area Forecasts are available on the Aviation Weather Center (AWC) web site at: <http://aviationweather.gov/products/fa/>.

Alaska Area Forecasts can also be found on the Alaska Aviation Weather Unit (AAWU) web site at: <http://aawu.arh.noaa.gov/areaforecasts.php>

7.1.1 Area Forecast Issuance

Area forecasts are issued by the following offices for the following areas:

- The Aviation Weather Center (AWC)
 - Conterminous U.S (CONUS) - Six (6) FAs covering separate geographical areas of the CONUS, excluding the Gulf of Mexico coastal waters west of 85W (Figure 7-1).
 - Gulf of Mexico: The northern Gulf of Mexico, including the Houston Oceanic FIR, the Gulf of Mexico portion of the Miami Oceanic FIR, and the coastal waters west of 85W longitude (Figure 7-1 and 7-2).
 - Caribbean Sea: Portions of the Gulf of Mexico (south of the Houston Oceanic FIR to approximately 22N latitude), the Caribbean Sea and adjacent portions of the North Atlantic (Figure 7-3).
- The Alaskan Aviation Weather Unit (AAWU)
 - Alaska: Seven (7) FAs covering separate geographical areas of Alaska and the adjacent coastal waters, including the Pribilof Islands and Southeast Bering Sea (Figure 7-5).
- WFO Honolulu, Hawaii

- Hawaii: The main Hawaiian Islands and adjacent coastal waters extending out 40 nautical miles from the coastlines (Figure 7-4).

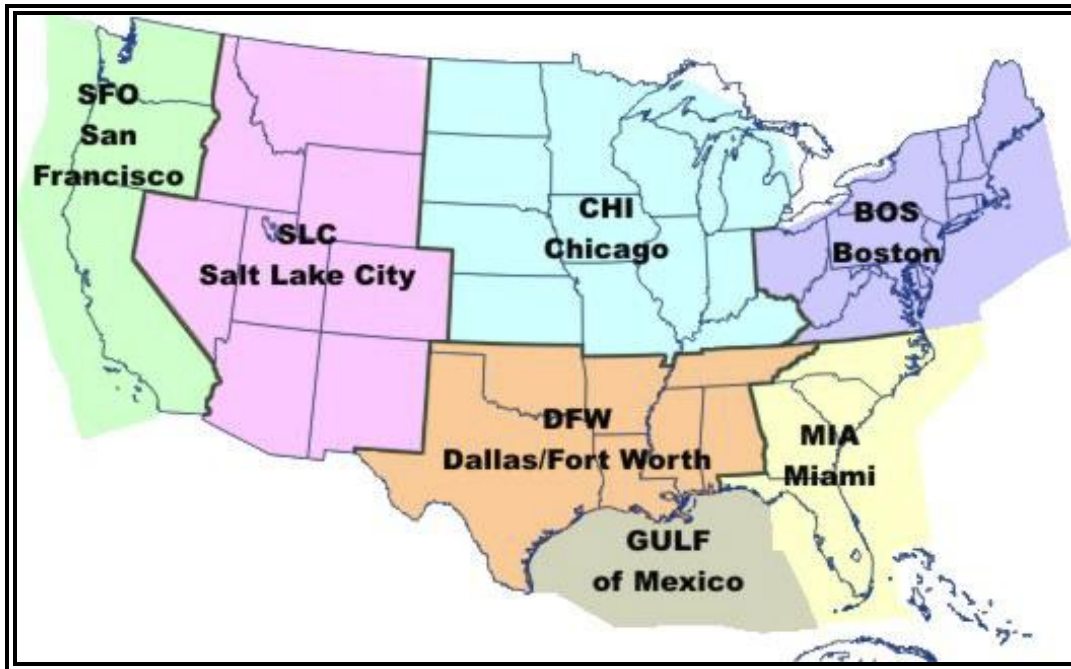


Figure 7-1. AWC Area Forecast Regions- Contiguous U.S.

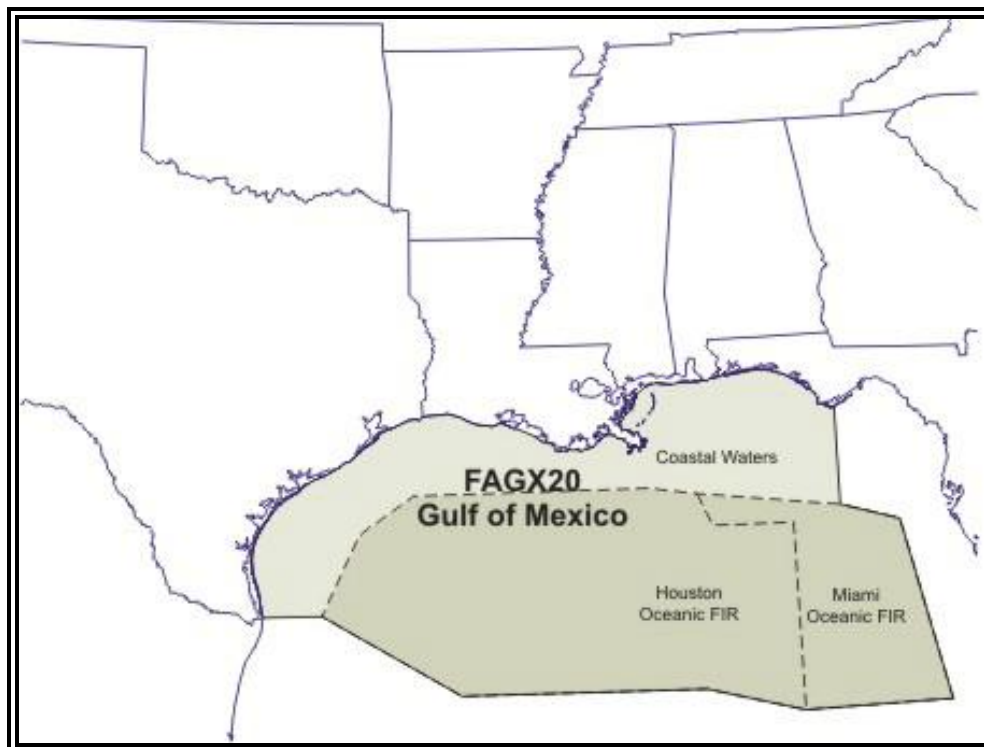


Figure 7-2. AWC Area Forecast Region and WMO Header - Gulf of Mexico

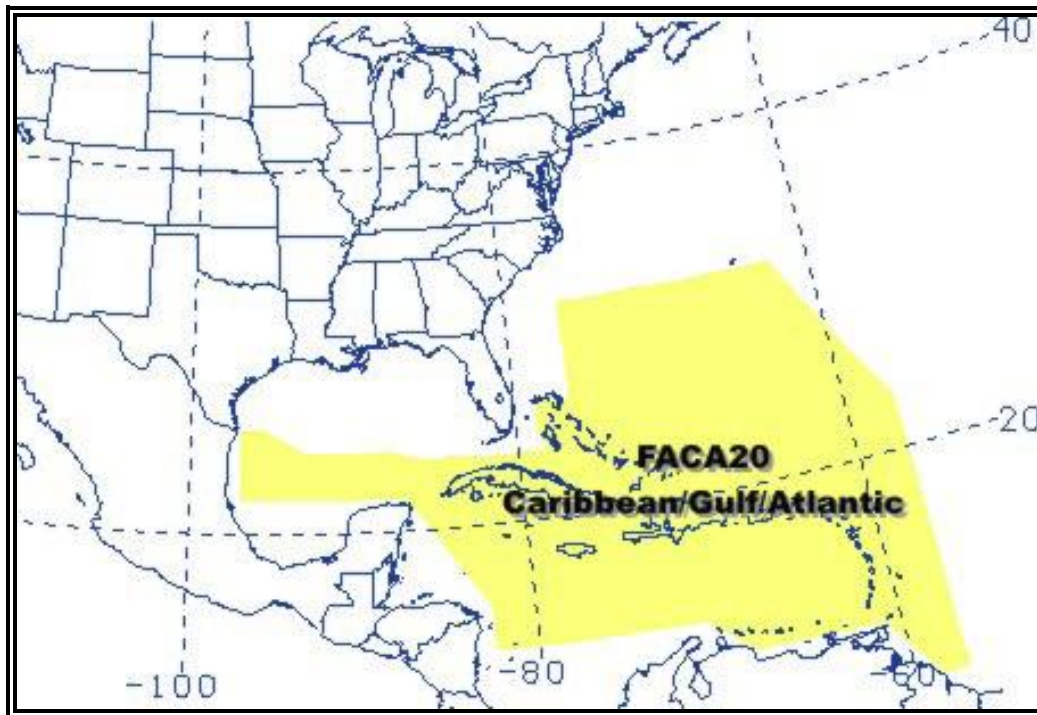


Figure 7-3. AWC Area Forecast Region and WMO Header - Caribbean

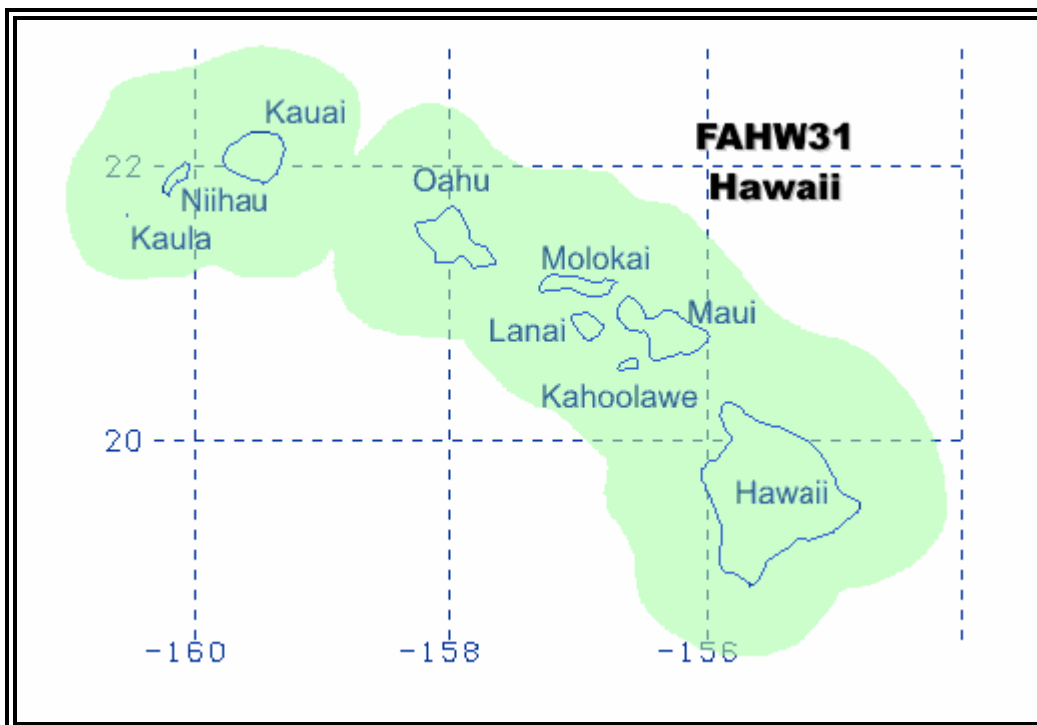


Figure 7-4. WFO Honolulu Area Forecast Region and WMO header - Hawaii

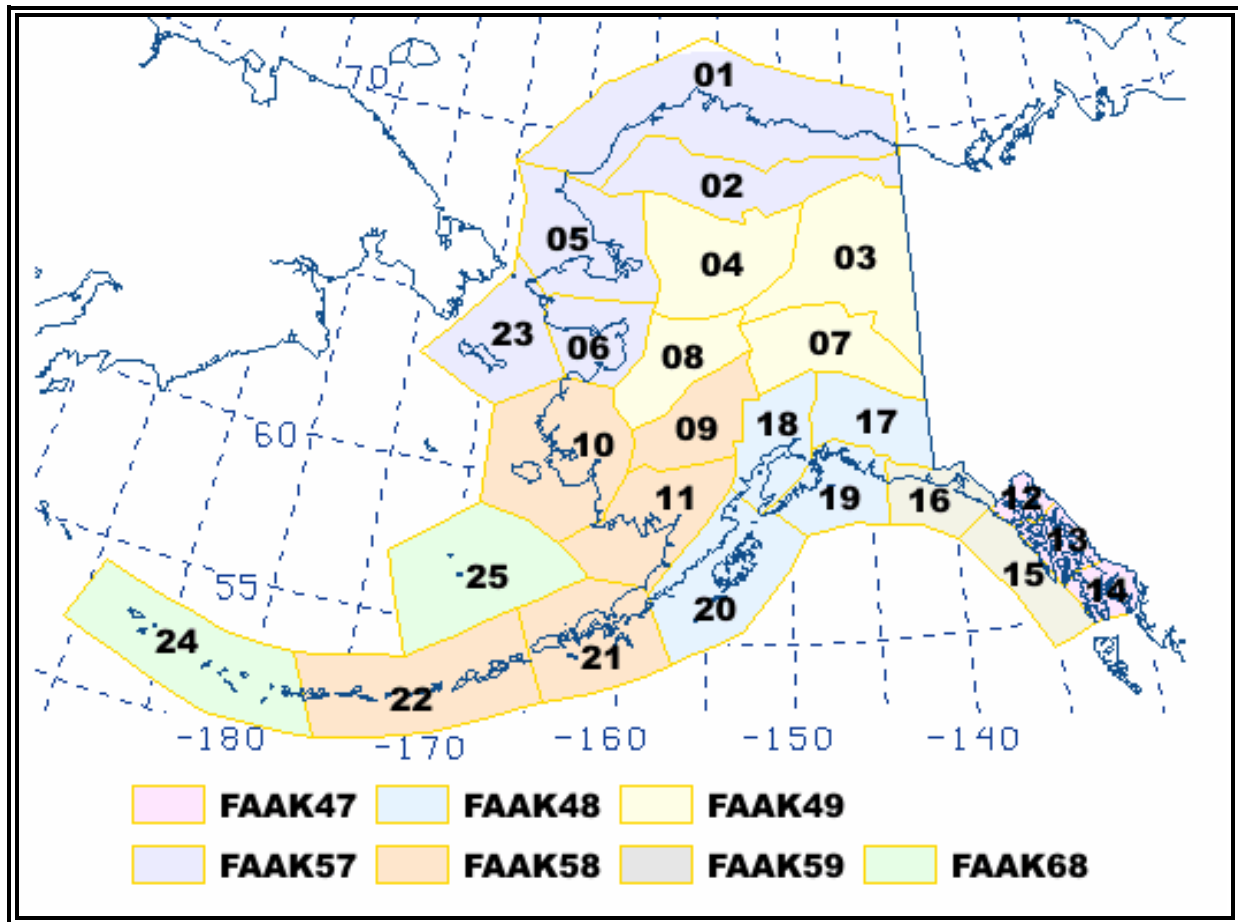


Figure 7-5. AAWU Flight Advisory and Area Forecast Zones - Alaska

Table 7-1. AAWU Area Forecast Zones – Alaska

1	Arctic Coast Coastal	14	Southern Southeast Alaska
2	North Slopes of the Brooks Range	15	Coastal Southeast Alaska
3	Upper Yukon Valley	16	Eastern Gulf Coast
4	Koyukuk and Upper Kobuk Valley	17	Copper River Basin
5	Northern Seward Peninsula-Lower Kobuk Valley	18	Cook Inlet-Susitna Valley
6	Southern Seward Peninsula-Eastern Norton Sound	19	Central Gulf Coast
7	Tanana Valley	20	Kodiak Island
8	Lower Yukon Valley	21	Alaska Peninsula-Port Heiden to Unimak Pass
9	Kuskowim Valley	22	Unimak Pass to Adak
10	Yukon-Kuskowim Delta	23	St. Lawrence Island-Bering Sea Coast
11	Bristol Bay	24	Adak to Attu
12	Lynn Canal and Glacier Bay	25	Pribilof Islands and Southeast Bering Sea
13	Central Southeast Alaska		

7.1.2 Area Forecast Standardization

All Area Forecasts follow these standards:

- All heights or altitudes are referenced to above mean sea level (AMSL), unless otherwise noted (i.e., prefaced by AGL or CIG), and annotated using the height in hundreds of feet, consisting of three digits (e.g., 040). For heights at or above 18,000

feet, the level is preceded by FL to represent flight levels (e.g., FL180). Tops are always referenced to AMSL.

- References to latitude and longitude are in whole degrees and minutes following the model: Nnn[nn] or Snn[nn], Wnnn[nn] or Ennn[nn] with a space between latitude and longitude and a hyphen between successive points. Example: N3106 W07118 – N3011 W7209
- Messages are prepared in abbreviated plain language using contractions from the [Federal Aviation Administration \(FAA\) Order 7340.2](#) for domestic products and [International Civil Aviation Organization \(ICAO\) document 8400](#) for international products issued for Oceanic FIRs. A limited number of non-abbreviated words, geographical names and numerical values of a self-explanatory nature may also be used.
- Weather and obstructions to visibility are described using the weather abbreviations for surface weather observations (METAR/SPECI). See the [Federal Meteorological Handbook \(FMH\) No. 1 – Surface Observations](#) or Section 3.1 of this document.

Note...For AWC FAs, “CSTL WTRS” refer to water areas that extend from the coastline to the FIR boundary. “CSTL SXNS” refer to land areas along and near the coastline.

Note: Refer to Appendix A for definitions of common terms used in Area Forecasts.

7.1.3 Area Forecast Issuance Schedule

Area forecasts are scheduled products issued at the following times.

Table 7-2. Area Forecast (FA) Issuance Schedule

	Boston and Miami (UTC)	Chicago and Fort Worth (UTC)	San Francisco and Salt Lake City (UTC)	Gulf of Mexico (UTC)	Caribbean (UTC)	Hawaii (UTC)	Alaska (UTC)
1st Issuance	0845 DT 0945 ST	0945 DT 1045 ST	1045 DT 1145 ST	0130	0330	0340	0145 DT 0245 ST
2nd Issuance	1745 DT 1845 ST	1845 DT 1945 ST	1945 DT 2045 ST	1030	0930	0940	0745 DT 0845 ST
3rd Issuance	0045 DT 0145 ST	0145 DT 0245 ST	0245 DT 0345 ST	1830	1530	1540	0145 DT 1445 ST
4th Issuance					2130	2140	1945 DT 2045 ST
<i>Note: DT – Daylight Time, ST – Standard Time, UTC – Coordinated Universal Time</i>							

7.1.4 Area Forecast Amendments

Amendments are issued whenever the weather significantly improves or deteriorates based upon the judgment of the forecaster. These updates are those required to keep forecasts of *non-AIRMET* conditions representative of existing or expected conditions. “AMD” is included after the date/time group on the FAA product line. The date/time group on the WMO and FAA lines is updated to indicate the time of the correction. The ending valid time remains unchanged.

7.1.5 Area Forecast Corrections

Area Forecasts containing errors will be corrected. "COR" is included after the date/time group on the FAA product line. The date/time group on the WMO and FAA lines is updated to indicate the time of the correction. The ending valid time remains unchanged.

7.1.6 Area Forecast Format – Conterminous U.S. (CONUS)

Area forecasts issued for the conterminous U.S. (CONUS) cover the airspace between the surface and 45,000 feet AMSL and include the following forecast sections:

- Synopsis: A short description of significant synoptic weather systems affecting the area during the 18 hour valid period. This includes the location and movement of pressure systems and fronts. Air mass descriptions may be used in the absence of significant weather systems. References to low ceilings and/or visibilities, strong winds, or any other phenomena that the forecaster considers useful may also be included.
- VFR Clouds/Weather: A 12-hour specific clouds and weather forecast, followed by a 6-hour categorical outlook giving a total forecast period of 18 hours. This section gives a general description of clouds and weather which cover an area greater than 3,000 square miles and are significant to VFR flight operations. The forecasts are referenced to states or geographic areas. States are presented in the order listed within the header of the FA, however, portions of adjacent states may be grouped together when they are forecast to have similar conditions. The following weather elements, if applicable, are included in the following order for each 12-hour specific forecast:
 - Sky condition (coverage, cloud base, and tops) if bases are higher than or equal to 1,000 feet AGL and at or below FL180. Heights are referenced to MSL unless preceded by AGL or CIG. Sky condition is not repeated for each new time group unless it is forecast to change.
 - Surface visibilities and associated obstructions when visibility is between 3 and 5 statute miles and coverage is 3,000 square miles or greater. When no visibility value is forecast, it is implied to be greater than 5 statute miles.
 - Weather (precipitation, including thunderstorms, fog, haze, blowing dust, etc.) if it results in visibilities of 3 to 5 statute miles.
 - Significant wind information (direction and speed) if the surface wind is sustained at 20 knots or greater and/or gusts are greater than or equal to 25 knots.

A 6-hour categorical outlook follows the 12-hour specific clouds and weather forecast. At a minimum, the category of the expected prevailing condition (IFR, MVFR, VFR) is stated in the outlook. If IFR or MVFR, the cause is listed (e.g., CIG, FG, BR, etc.). VFR stands alone except for wind (WND), thunderstorms (TSRA) and precipitation types (without intensities). The contraction "WND" is appended to any category if the sustained surface wind is expected to be 20kts or more or surface wind gusts are expected to be 25 knots or more during the majority of the 6-hour outlook period.

LINE	
1	DFWC FA 120945
2	SYNOPSIS AND VFR CLDS/WX
3	SYNOPSIS VALID UNTIL 130400
4	CLDS/WX VALID UNTIL 122200...OTLK VALID 122200-130400
5	OK TX AR TN MS AL

Figure 7-6. Area Forecast – CONUS Communication and Product Header Example

Table 7-3. Decoding a CONUS Area Forecast Communication and Product Header

Line	Content	Description
1	DFW	Area Forecast region identifier
	C	Indicates VFR clouds and weather forecast
	FA	Product type
	120945	Issuance and beginning of valid date/time (UTC)
2	SYNOPSIS AND VFR CLDS/WX	Statement of weather information contained in this forecast message
3	SYNOPSIS VALID UNTIL 130400	Synopsis valid date and time
4	CLDS/WX VALID UNTIL 122200...OTLK VALID 122200-130400	The clouds and weather section valid time. The valid date and time of the outlook.
5	OK TX AR TN MS AL	Description of the area for which the FA is valid.

```

S CNTL AND SERN TX
AGL SCT-BKN010. TOPS 030. VIS 3-5SM BR. 14-16Z
BCMG AGL SCT 030. 19Z AGL SCT050. OTLK...VFR.
.
OK
PNHDL AND NW...AGL SCT030 SCT-BKN100. TOPS FL200. 15Z
AGL SCT040 SCT100. AFT 20Z SCT TSRA DVLPG..FEW POSS
SEV. CB TOPS FL450. OTLK...VFR.
REMAINDER OF STATE...CIG BKN020. TOPS 050. VIS 3-5SM
BR. 14Z AGL SCT-BKN040. TOPS 100. 18Z CIG BKN060.
TOPS FL180. 22Z SCT TSRA DVLPG..FEW POSS SEV. CB
TOPS ABV FL450. OTLK...VFR.
.
    
```

Figure 7-7. Area Forecast - Clouds and Weather Element Example

The “Clouds and Weather” section above is decoded as follows:

South central and southeast Texas:

Scattered to broken bases at 1,000 feet above ground level ([AGL](#)). Tops at 3,000 feet above mean sea level (MSL). Visibility 3 to 5 statute miles in [mist](#). Between 1400 and 1600 UTC...clouds bases becoming scattered at 3,000 feet [AGL](#). 1900 UTC...scattered bases at 5,000 feet [AGL](#). 12 to 18 hour categorical outlook...VFR.

Oklahoma:

Panhandle and northwest...scattered bases at 3,000 feet [AGL](#), scattered to broken bases at 10,000 feet [AGL](#). Tops at flight level 20,000 feet MSL. 1500 UTC...scattered bases at 4,000 feet [AGL](#), scattered bases at 10,000 feet [AGL](#). After 2000 UTC...scattered thunderstorms with rain [showers](#) developing...a few possible severe. Cumulonimbus tops to flight level 45,000 feet MSL. Outlook...VFR.

Remainder of the state...[Ceilings](#) broken at 2,000 feet [AGL](#). Tops at 5,000 feet MSL. Visibilities 3 to 5 statute miles in [mist](#). 1400 UTC...scattered to broken bases at 4,000 feet [AGL](#). Tops at 10,000 feet MSL. 1800 UTC...[ceilings](#) broken 6,000 feet [AGL](#). Tops to flight level 18,000 feet MSL. 2200 UTC...scattered thunderstorm with rain [showers](#) developing...a few possibly severe. Cumulonimbus tops above flight level 45,000 feet MSL. 12-18 hour categorical outlook...VFR.

7.1.6.1 Area Forecast – Conterminous U.S. (CONUS) Examples

7.1.6.1.1 Area Forecast – BOS Example

FAUS41 KNCI 081745 (*ICAO product header*)

FA1W (*NWS AWIPS Communication header*)

BOSC FA 081745 (*Area forecast region, product type, issuance date/time*)

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 091200

CLDS/WX VALID UNTIL 090600...OTLK VALID 090600-091200
ME NH VT MA RI CT NY LO NJ PA OH LE WV MD DC DE VA AND CSTL WTRS

.
SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.

.
SYNOPSIS...18Z CDFNT 30N PQI-40E MPV-ALB-20N JHW LN. STNR FNT 20N JHW-ECK LN. STNR FNT EWC-ROD-IND LN. TROF 210SE SIE-170SE ECG LN CONTG SWD. HIGH WRN NC. 12Z STNR FNT FM LOW NR FWA ALG 20N CLE-JHW-ALB-30NNE BOS LN. CDFNT 30NNE BOS-120SE BGR LN. CDFNT FM LOW NR FWA ALG PXV-50SE FAM LN CONTG SWWD. HIGH NR ODF.

.
ME NH VT
NRN ME...SCT040 BKN060 TOP FL250. OCNL BKN040. SCT -SHRA/ISOL -TSRA. CB TOP FL350. 21Z BKN040. ISOL -SHRA. WND W G25KT. 03Z SKC. OTLK...VFR.
VT/NRN NH/RMNR ME MTNS...SCT-BKN040 BKN060 TOP FL250. SCT SHRA/ISOL TSRA. CB TOP FL350. 03Z BKN040. OCNL VIS 3-5SM BR. OTLK...MVFR CIG BR.
SRN NH/RMNR ME...SCT040 BKN100 TOP FL250. OCNL BKN040 IN WDLY SCT -SHRA/ISOL -TSRA BECMG AFT 19Z SCT TSRA. TS POSS SEV. CB TOP FL400. 04Z BKN020. WDLY SCT -SHRA. OTLK...MVFR CIG SHRA BR.

.
MA RI CT
CT CSTL PLAIN/RI/SERN MA...SKC. 21Z SCT040. ISOL TSRA. CB TOP FL400. 03Z SKC. OCNL VIS 3-5SM BR. OTLK...IFR CIG BR.
RMNR...SCT100. 19Z SCT040 BKN100 TOP 160. SCT TSRA POSS SEV. CB TOP FL450. 02Z BKN040. WDLY SCT SHRA. OTLK...MVFR CIG BR.

.
NY LO
LO/N CNTRL-NERN NY...SCT-BKN040 BKN060 TOP 160. SCT SHRA/ISOL TSRA. CB TOP FL350. 03Z BKN040. WDLY SCT -SHRA. OTLK...MVFR CIG SHRA.
WRN-S CNTRL NY...BKN040 OVC060 TOP 160. SCT -TSRA. CB TOP FL450. 03Z BKN030. SCT SHRA. OTLK...MVFR CIG SHRA.
EXTRM SERN NY-LONG ISLAND...SKC. 21Z SCT040. ISOL TSRA. 03Z SKC. OCNL VIS 3-5SM BR. OTLK...IFR CIG BR.
RMNR NY...BKN050 TOP 160. SCT TSRA POSS SEV. CB TOP FL450. 03Z BKN040. SCT SHRA. OTLK...MVFR CIG SHRA.

.
PA NJ
WRN-N CNTRL PA...BKN040 OVC060 TOP FL220. SCT TSRA. CB TOP FL400. 03Z BKN060. SCT SHRA NWRN/N CNTRL PA. OTLK...VFR SWRN PA...MVFR CIG SHRA NWRN/N CNTRL PA.
S CNTRL-NERN PA...BKN060 TOP FL220. ISOL TSRA BECMG AFT 20Z SCT TSRA. CB TOP FL400. 03Z OVC060. SCT SHRA NERN PA. OTLK...MVFR CIG SHRA NERN PA. MVFR CIG BR S CNTRL PA.
SERN PA-NRN NJ...SCT060. AFT 21Z ISOL TSRA. CB TOP FL400. 03Z SKC OR SCT CI. OTLK...VFR.
SRN NJ...SKC OR SCT CI. OTLK...VFR.

OH LE
 LE/NRN 1/2 OH...BKN030 OVC060 TOP FL220. SCT TSRA POSS SEV. CB
 TOP FL450. OTLK...MVFR CIG TSRA.
 SWRN 1/4 OH...SCT040 BKN100 TOP FL220. SCT TSRA POSS SEV. CB TOP
 FL450. 03Z BKN060. WDLY SCT TSRA. OTLK...MVFR CIG TSRA.
 SERN 1/4 OH...SCT050 BKN100 TOP FL220. OCNL BKN050 IN WDLY SCT TSRA.
 TS POSS SEV. CB TOP FL400. 03Z BKN060. OTLK...VFR.
 .
 WV
 W WV PNHDL-NWRN...SCT100... 19Z BKN060 TOP FL220. TIL 03Z SCT
 SHRA/WDLY SCT TSRA. CB TOP FL450. OTLK...VFR.
 SW...SCT080. AFT 20Z ISOL TSRA. CB TOP FL400. 01Z
 SCT100 SCT CI. OTLK...VFR.
 SERN WV...SCT070. 01Z SKC. OTLK...VFR BECMG 09Z IFR BR.
 RMNDR...SCT080. 20Z SCT080 BKN100 TOP FL220. ISOL TSRA. CB TOP
 FL400. 03Z SCT-BKN CI. OTLK...VFR BECMG 09Z IFR BR.
 .
 MD DC DE VA
 NRN 1/2 APLCNS...SCT080. 20Z SCT080 BKN100 TOP FL220. ISOL TSRA.
 CB TOP FL400. 03Z SCT-BKN CI. OTLK...VFR BECMG 09Z IFR BR.
 SRN 1/2 APLCNS...SCT070. 01Z SKC. OTLK...VFR BECMG 09Z IFR HZ BR.
 SERN VA CSTL SXNS...SCT040. 04Z SCT-BKN100 TOP FL250. OTLK...VFR.
 DC/DE/RMNDR MD/RMNDR VA...SCT040. 00Z SKC OR SCT CI. OTLK...VFR.
 .
 CSTL WTRS
 ME/NH...SCT040 BKN100 TOP FL250. WDLY SCT SHRA/TSRA DVLPG 20-22Z.
 CB TOP FL400. OTLK...VFR SHRA.
 RMNDR N OF ACK...SKC. BECMG 2123 SCT040 BKN100 TOP FL250. WDLY
 SCT SHRA/TSRA. CB TOP FL400. OTLK...VFR SHRA.
 S OF 30NE ORF-150SE SIE LN...SCT040 SCT CI. 03Z SCT-BKN100 TOP
 FL250. OTLK...VFR.
 RMNDR...SCT060. 00Z SKC OR SCT CI. OTLK...VFR.

7.1.6.1.2 Area Forecast – SFO (FA) Example

FAUS46 KKCI 210245 (*ICAO product header*)
 FA6W (*NWS AWIPS Communication header*)
 SFOC FA 210245 (*Area forecast region, product type, issuance date/time*)
 SYNOPSIS AND VFR CLDS/WX
 SYNOPSIS VALID UNTIL 212100
 CLDS/WX VALID UNTIL 211500...OTLK VALID 211500-212100
 WA OR CA AND CSTL WTRS
 .
 SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
 TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
 NON MSL HGTS DENOTED BY AGL OR CIG.
 .
 SYNOPSIS...SFC...03Z OCFNT SE AB-LOW PRES SCNTRL MT-NCNTRL UT-
 BTY-SRN CA. TROF SRN NV-SW AZ. TROF NERN PTNS WA CSTL WTRS-WRN

PTNS OR CSTL WTRS. HI PRES RDG ECNTRL OR-NRN CA CSTL WTRS. 21Z
CDFNT NERN MT-SERN WY-SRN CA. HI PRES RDG NCNTRL MT-SW OR. TROF
NCNTRL CA-NR 60E SAC-SRN SIERNEV. ALF...03Z UPR LVL TROF NCNTRL
WA-CNTRL CA. NWLY JTST OR CSTL WTRS-NW CA CSTLN. 21Z UPR LVL TROF
SW BC-SW UT-SW AZ. NWLY JTST WRN WA-NERN CA-SERN CA-WRN AZ.

.
WA CASCDS WWD

CSTL...BKN015-025 OVC060 TOP 140. WDLY SCT -SHRA. 10Z OVC015 TOP
100. OTLK...MVFR CIG.
MTNS...OVC040-050 TOP FL180. VIS 3-5SM -RA/-SN ABV 040.
OTLK...IFR CIG SHSN SHRA BECMG MVFR CIG SHSN SHRA 19Z.
RMNDR...BKN035-045 TOP 150. 05Z BKN015-025 OVC050 TOP 160. WDLY
SCT -SHRA. OTLK...MVFR CIG SHRA BECMG VFR 19Z.

.
WA E OF CASCDS

CNTRL WA...SCT-BKN CI. BECMG 0709 BKN110 TOP 150. OTLK...VFR.
ERN WA...OVC050 TOP FL180. ISOL -SHRA. 04Z SCT090 SCT-BKN CI. 10Z
BKN050 OVC100 TOP 120. ISOL -SHRA. OTLK...MVFR CIG BECMG VFR SHRA
19Z.

.
OR CASCDS WWD

CSTL...BKN015-025 OVC060 TOP 140. WDLY SCT -SHRA. 10Z OVC015 TOP
100. OTLK...MVFR CIG.
NW INTR...BKN040 TOP 140. TIL 11Z WDLY SCT -SHRA. 12Z OVC025.
OTLK...MVFR CIG BECMG VFR SHRA 19Z.
N CASCDS...OVC040-050 TOP FL180. VIS 3-5SM -RA/-SN ABV 040.
OTLK...IFR CIG SHSN SHRA BECMG MVFR CIG SHSN SHRA 19Z.
SW INTR...SCT060. 12Z SCT-BKN040 BKN060 TOP 120. OTLK...VFR.
S CASCDS...SCT-BKN080 TOP 150. TIL 04Z ISOL -SHRA/-TSRA. CB TOP
FL250. 05Z SCT090. OTLK...VFR.

.
OR E OF CASCDS

NW...SCT CI. WND NW 20G30KT. 08Z SCT-BKN080 BKN110 TOP 150. WND
WLY G25KT. OTLK...VFR.
SW...BKN080 TOP 150. TIL 04Z ISOL -SHRA/-TSRA. CB TOP FL250. 05Z
SCT090. OTLK...VFR...20Z WND.
NERN...BKN060 TOP 160. WDLY SCT -SHRA. 06Z SCT100. 11Z BKN050
OVC100 TOP 120. ISOL -SHRA. OTLK...VFR SHRA.
SE...SCT-BKN090 OVC120 TOP FL250. WDLY SCT -SHRA/ISOL -TSRA. CB
TOP FL260. WND W G25KT. 07Z BKN090 TOP 150. OTLK...VFR...16Z WND.

.
NRN CA...STS-SAC-TVL LN NWD

CSTL SXNS N OF 40SSE FOT...BKN025 TOP 120. 09Z OVC010-020 TOP
100. OTLK...MVFR CIG BECMG VFR 18Z.
RMNDR CSTL SXNS...SKC. OTLK...VFR.
SHASTA-SISKIYOUS-NERN CA...SCT-BKN080 TOP 150. TIL 04Z ISOL
-SHRA/-TSRA. CB TOP FL250. WND NW G25KT. 05Z SCT090. OTLK...VFR.
SAC VLY...SKC. TIL 06Z WND W G25KT. OTLK...VFR WND 16Z.
NRN SIERNEV...SCT100. ISOL -SHRA/-TSRA. CB TOP FL300. WND SW G25-
30KT. 09Z SCT120. OTLK...VFR.

.
CNTRL CA

CSTL SXNS
CSTLN N OF SNS...OVC010-015 TOP 020. WND W G25KT. 07Z SKC.
OTLK...VFR.
CSTLN SNS SWD...OVC010-015 TOP 020. 08Z SCT010. 10Z SKC.
OTLK...VFR...16Z.
INLAND...SKC. TIL 09Z WND NW G25-30KT. OTLK...VFR WND 16Z.
SAN JOAQUIN VLY...SKC. WND NW 20G30KT. OCNL BLDU. OTLK...VFR WND.
SRN SIERNEV...SKC. WND W 25G35KT. OTLK...VFR WND.
.
SRN CA...VBG-NID-60NNW BIH LN SWD
CSTL SXNS
CSTLN N OF LAX...SCT015. 10Z OVC015 TOP 025. 14Z SCT015.
OTLK...VFR...18Z WND.
CSTLN LAX SWD...OVC015-025 TOP 030. OTLK...VFR.
INLAND N OF LAX...SKC. OTLK...VFR.
INLAND LAX SWD...SKC. 07Z OVC010 TOP 030. VIS 3SM BR. OTLK...MVFR
CIG HZ BECMG 20Z VFR WND.
COLORADO RIVER VLY...SKC. WND SW G25KT. OTLK...VFR WND BECMG 18Z MVFR
BLDU BLSA WND.
INTR MTNS-DESERTS...SKC. WND NW 25G30-35KT. OCNL BLDU. OTLK...VFR
WND.
.
CSTL WTRS
WA/OR/NRN CA...BKN015-025 OVC060 TOP 140. WDLY SCT -SHRA. WND
NW G25KT. 10Z OVC015 TOP 100. OTLK...MVFR CIG.
CNTRL-SRN CA...SCT-BKN015 TOP 025. OCNL VIS 3-5SM BR. WND NW 20G30-
40KT. OTLK...VFR WND CNTRL CA...MVFR CIG WND SRN CA.
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7.1.7 Area Forecast Format – Gulf of Mexico (FAGX)

Area Forecasts issued for the Gulf of Mexico (FAGX) cover the airspace between the surface and 45,000 feet AMSL (Above Mean Sea Level) and include the following elements with each geographical section having an entry even if it is negative.

- **Synopsis:** This is a brief discussion of the significant synoptic weather affecting the FAGX area during the entire 24-hour valid period.
- **Significant Clouds and Weather:** This is a description of the significant clouds and weather for the first 12-hours including the following elements.
 - Cloud amount (SCT, BKN or OVC) for clouds with bases below FL180
 - Cloud bases and tops associated with the above bullet
 - Precipitation and thunderstorms
 - Visibility below 7 SM and obstruction(s) to visibility
 - Sustained surface winds greater than or equal to 20 knots
 - 12- to 24-hour categorical outlook (LIFR, IFR, MVFR or VFR)
- **Icing and Freezing Level:** Moderate or severe icing and freezing level. For the coastal waters portion of the FAGX, users will be referred to the appropriate CONUS AIRMET.

- Turbulence: Moderate or greater turbulence. For the coastal waters portion of the FAGX, users will be referred to the appropriate CONUS AIRMET.

7.1.7.1 Area Forecast – Gulf of Mexico (FAGX) Example

FAGX20 KPCI 091812 (*ICAO product header*)
OFAGX (*NWS AWIPS Communication header*)
SYNOPSIS VALID TIL 101900Z
FCST...091900Z-100700Z
OTLK...100700Z-101900Z
INTERNATIONAL OPERATIONS BRANCH
AVIATION WEATHER CENTER KANSAS CITY MISSOURI

•
CSTL WATERS FROM COASTLINE OUT TO HOUSTON OCEANIC FIR AND GLFMEX MIAMI OCEANIC FIR AND W OF 85W. HOUSTON OCEANIC FIR AND GLFMEX MIAMI OCEANIC FIR.

•
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS. HGTS MSL.

•
01 SYNOPSIS...HIGH PRES OVR NRN GLFMEX.

•
02 SIGNIFICANT CLD/WX...

•
CSTL WATERS...
SCT020. OTLK...VFR.

•
HOUSTON OCEANIC FIR...
SCT020. OTLK...VFR.

•
GLFMEX MIAMI OCEANIC FIR...
SCT020. OTLK...VFR.

•
03 ICE AND FRZLVL...
CSTL WATERS...SEE AIRMETS ZULU WAUS44 KPCI AND WAUS42 KPCI.
HOUSTON OCEANIC FIR... NO SGFNT ICE EXP OUTSIDE CNVTV ACT.
GLFMEX MIAMI OCEANIC FIR...NO SGFNT ICE EXP OUTSIDE CNVTV ACT.
FRZLVL...140 THRUT.

•
04 TURB...
CSTL WATERS...SEE AIRMETS TANGO WAUS44 KPCI AND WAUS42 KPCI.
HOUSTON OCEANIC FIR... NO SGFNT TURB EXP OUTSIDE CNVTV ACT.
GLFMEX MIAMI OCEANIC FIR...NO SGFNT TURB EXP OUTSIDE CNVTV ACT.

7.1.8 Area Forecast Format – Caribbean (FACA)

Area forecasts issued for the Caribbean (FACA) cover the airspace between the surface and 24,000 feet AMSL and include the following elements. Each geographical section will have an entry even if it is negative.

- Synopsis: brief discussion of the synoptic weather affecting the FACA area during the 24-hour valid period.

- Significant Clouds and Weather: description of the significant clouds and weather for the first 12 hours including the following elements.
 - Cloud amount (SCT, BKN or OVC) for cloud bases below FL180
 - Cloud bases and tops associated with the above bullet
 - Precipitation and thunderstorms
 - Visibility below 7 SM and obstruction(s) to visibility
 - Sustained surface winds greater than or equal to 20 knots
 - 12- to 24-hour categorical outlook (IFR, MVFR or VFR)
- Icing and Freezing Level: moderate or greater icing and freezing level
- Turbulence: moderate or greater turbulence

7.1.8.1 Area Forecast – Caribbean (FACA) Example

```

FACA20 KKCI 121530 (ICAO product header)
OFAMKC (NWS AWIPS Communication header)
INTERNATIONAL OPERATIONS BRANCH
AVIATION WEATHER CENTER KANSAS CITY MISSOURI
VALID 121600-130400
OUTLOOK...130400-131600
.
ATLANTIC S OF 32N W OF 57W...CARIBBEAN...GULF OF MEXICO BTN 22N AND
24N.
.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS. SFC TO 400 MB.
.
SYNOPSIS...WK CDFNT EXTDS FM NR 28N60W TO 23N63W TO THE MONA
PASSAGE. CDFNT WL MOV EWD AND WKN TODAY. EXP NARROW BAND OF
CLDS WITH ISOL SHRA INVOF CDFNT.
.
SIGNIFICANT CLD/WX...
ERN MONTERREY FIR...NRN MERIDA FIR
SCT025 SCT060. OTLK...VFR.
.
ATLC SWRN NEW YORK FIR...SAN JUAN FIR
NW OF CDFNT...SCT025 SCT060. Lyr OCNL BKN. TOP 120. ISOL SHRA.
OTLK...VFR.
VCNTY CDFNT...SCT025 BKN060. OCNL BKN025. TOP 120. WDLY SCT
SHRA. ISOL TSRA TIL 20Z. OTLK...VFR SHRA.
SE OF CDFNT...SCT025 SCT060. ISOL SHRA. OTLK...VFR.
.
ATLC MIAMI FIR
SCT025 SCT060. Lyr OCNL BKN. TOP 120. ISOL SHRA. OTLK...VFR.
.
WRN PIARCO FIR...NRN MAIQUETIA FIR...CURACAO FIR
BTN 61W-63W...SCT025 BKN060. OCNL BKN025. TOP 120. WDLY SCT
SHRA. OTLK...VFR SHRA.
RMNDR...SCT025 SCT060. ISOL SHRA. OTLK...VFR.
.
    
```


SANTO DOMINGO FIR...PORT-AU-PRINCE FIR
SCT025 SCT060. LVR OCNL BKN. TOP 120. ISOL SHRA. OTLK...VFR.

.
NRN BARRANQUILLA FIR...NRN PANAMA FIR
SCT025 SCT060. ISOL SHRA. SFC WND NE 20-25KT. OTLK...VFR.

.
KINGSTON FIR...NERN CNTRL AMERICAN FIR...HABANA FIR
SCT025 SCT060. ISOL SHRA. OTLK...VFR.

.
ICE AND FRZLVL...
NO SGFNT ICE EXP OUTSIDE CNVTV ACT.
FRZLVL... 145-170.

.
TURB...
NO SGFNT TURB EXP OUTSIDE CNVTV ACT.

7.1.9 Area Forecast Format - Hawaii

Area forecasts issued for Hawaii cover the airspace between the surface and 45,000 feet AMSL and include the following elements.

- Synopsis: brief discussion of the significant synoptic weather affecting the FA area during the 18-hour valid period.
- Clouds and Weather: description of the clouds and weather for the first 12-hour period including the following elements.
 - Cloud amount (SCT, BKN or OVC) with bases and tops
 - Visibilities of 6 SM or less with obstruction(s) to visibility
 - Precipitation and thunderstorms
 - Sustained surface winds 20 knots or greater
- 12- to 18-hour categorical outlook: IFR, marginal MVFR, or VFR, including expected precipitation and/or obstructions to visibility

7.1.9.1 Area Forecast – Hawaii Example

FAHW31 PHFO 080940 (*ICAO product header*)
FA0HI (*NWS AWIPS Communication header*)

.
HNLC FA 080940 (*Area forecast region, product type, issuance date/time*)
SYNOPSIS AND VFR CLD/WX
SYNOPSIS VALID UNTIL 090400
CLD/WX VALID UNTIL 082200...OUTLOOK VALID 082200-090400

.
SEE AIRMET SIERRA FOR IFR CLD AND MT OBSC.
TS IMPLY SEV OR GREATER TURB SEV ICE LOW LEVEL WS AND IFR COND.
NON MSL HGT DENOTED BY AGL OR CIG.

.
SYNOPSIS...SFC HIGH FAR N PHNL NEARLY STNR.

.
BIG ISLAND ABOVE 060.

SKC. 20Z SCT090. OUTLOOK...VFR.

.
BIG ISLAND LOWER SLOPES...COAST AND ADJ WATERS FROM UPOLU POINT TO CAPE KUMUKAHI TO APUA POINT.

SCT030 BKN050 TOPS 080 ISOL BKN030 VIS 3-5SM -SHRA BR. 21Z SCT030 SCT-BKN050 TOPS 080 ISOL BKN030 5SM -SHRA. OUTLOOK...VFR.

.
BIG ISLAND LOWER SLOPES...COAST AND ADJ WATERS FROM APUA POINT TO SOUTH CAPE TO UPOLU POINT. SKC. 21Z SCT-BKN060 TOPS 080. 23Z SCT030 SCT-BKN060 TOPS 080 ISOL BKN030 -SHRA. OUTLOOK...VFR.

.
BIG ISLAND LOWER SLOPES...COAST AND ADJ WATERS FROM SOUTH CAPE TO PHKO TO UPOLU POINT.

SCT050 ISOL BKN050 TOPS 080. 18Z FEW050. 23Z SCT-BKN050 TOPS 080. OUTLOOK...VFR.

.
N AND E FACING SLOPES...COAST AND ADJ WATERS OF THE REMAINING ISLANDS. SCT020 BKN045 TOPS 070 TEMPO BKN020 VIS 3-5SM -SHRA...FM OAHU EASTWARD ISOL CIG BLW 010 AND VIS BLW 3SM SHRA BR WITH TOPS 120. 22Z SCT025 SCT-BKN050 TOPS 070 ISOL BKN025 3-5SM -SHRA. OUTLOOK...VFR.

.
REST OF AREA.

SCT035 SCT-BKN050 TOPS 070 ISOL BKN030 -SHRA. 20Z SCT050 ISOL SCT030 BKN045 TOPS 070 -SHRA. OUTLOOK...VFR.

7.1.10 Area Forecast Format - Alaska

Area forecasts issued for Alaska cover the airspace between the surface and 45,000 feet AMSL and include the following elements. Clouds and weather, turbulence and icing information is included in each geographical zone.

- Synopsis: a brief description of the significant synoptic weather affecting the FA area during the first 18 hours of the forecast period.
- Clouds and Weather: a description of the clouds and weather for each geographical zone during the first 12 hours of the forecast period including the following elements:
 - SIGMET information for thunderstorms and volcanic ash
 - AIRMET information for IFR ceiling and visibility, mountain obscuration, and strong surface winds
 - Cloud amount (SCT, BKN or OVC) with bases and tops
 - Visibilities of 6 SM or less with obstruction(s) to visibility
 - Precipitation and thunderstorms
 - Surface wind greater than 20 knots
 - Mountain pass conditions using categorical terms (for selected zones only)
 - 12- to 30-hour categorical outlook (VFR, MVFR, and IFR)
- Turbulence: a description of expected turbulence conditions including the following elements:
 - SIGMET information for turbulence
 - AIRMET information for turbulence or low level wind shear

- Turbulence not meeting SIGMET or AIRMET criteria during the 6- to 12-hour period
- If no significant turbulence is forecast, NIL SIG will be entered.
- Icing and freezing level: a description of expected icing conditions including the following elements.
 - SIGMET information for icing
 - AIRMET information for icing and freezing precipitation
 - Icing not meeting SIGMET or AIRMET criteria during the 6- to 12-hour period
 - Freezing level
 - If no significant icing is forecast, NIL SIG will be entered followed by the freezing level.

7.1.10.1 Area Forecast – Alaska Example

FAAK48 PAWU 251345 *(ICAO product header)*

FA8H *(NWS AWIPS Communication header)*

ANCH FA 251345 *(Area forecast region, product type, issuance date/time)*

AK SRN HLF EXC SE AK...

.
AIRMETS VALID UNTIL 252000

TS IMPLY POSSIBLE SEV OR GREATER TURB SEV ICE LLWS AND IFR CONDS.

NON MSL HEIGHTS NOTED BY AGL OR CIG.

.
SYNOPSIS VALID UNTIL 260800

972 MB BRISTOL BAY LOW WL MOV N TO 50 S PAOM AT 987 MB BY END OF PD.
ASSOCIATED OCCLUDED FRONT FM PALJ..KENNEDY ENTRANCE..SE WL MOV NE TO
PAMH..PACV..SE BY 08Z.

.
COOK INLET AND SUSITNA VALLEY AB...VALID UNTIL 260200

...CLOUDS/WX...

AIRMET IFR/MT OBSCAK RANGE/W SIDE COOK INLET..OCNL CIGS BLW 10
VIS BLW 3SM -RA BR. NC...

OTHERWISE..AK RANGE/W SIDE INLET..SCT005 OVC020 VIS 3-5SM -RA BR.

ELSEWHERE..SCT025 BKN045 OVC080 LYR ABV TO FL250. OCNL BKN025 OVC045 -
RA.

COOK INLET..SFC WND NE 20G30 KTS. THRU TERRAIN GAPS..ERN MTS/AK

RANGE..SFC WND E 30G60 KTS.

OTLK VALID 260200-262000...MVFR CIG RA WND.

PASSES...LAKE CLARK..MERRILL..RAINY..IFR CIG RA WND. WINDY..MVFR CIG

RA. PORTAGE..IFR CIG RA WND.

...TURB...

SIGMETKILO 1 VALID 251607/252000 PANC-

OCNL SEV TURB FCST BLW 080 WI AN AREA FM TKA-JOH-MDO-AKN-SQA-TKA.

THIS IS THE AREA S OF A PAHZ-PATK LN.

AIRMET TURB/LLWSOCNL MOD TURB BLW 120. LLWS. NC...

...ICE AND FZLVL...

AIRMET ICEOCNL MOD RIME/MX ICEIC 050-160. FZLVL 050. NC...

.
COPPER RIVER BASIN AC...VALID UNTIL 260200

...CLOUDS/WX...
 FEW045 SCT090 BKN-OVC180 TOP FL250.
 SFC WND SE G 25 KTS.
 WRN MTS..ISOL BKN025 OVC045 4SM -SHRA.
 OTLK VALID 260200-262000...VFR.
 PASS...TAHNETA..MVFR CIG.
 ...TURB...
 NIL SIG.
 ...ICE AND FZLVL...
 NIL SIG. FZLVL 050.
 .
 CNTRL GLF CST AD...VALID UNTIL 260200
 ...CLOUDS/WX...
 AIRMET MT OBSCMTS OBSCD IN CLDS/PRECIPITATION. NC...
 SCT020 OVC040 LYRD ABV TO FL250 -RA.
 OCNL SCT005 OVC020 VIS 3-5SM -RA BR.
 SFC WND E 20G35 KTS. THRU TRRN GAPS WND E-NE 25G50 KTS.
 ALONG KENAI PENINSULA..ISOL CIGS BLW 10 VIS BLW 3SM RA BR.
 OTLK VALID 260200-260200..MVFR CIG RA WND.
 ...TURB...
 SIGMETKILO 1 VALID 251607/252000 PANC-
 OCNL SEV TURB FCST BLW 080 WI AN AREA FM TKA-JOH-MDO-AKN-SQA-TKA.
 THIS IS THE AREA E OF A JOH-PAMD LN.
 AIRMET TURB/LLWSOCNL MOD TURB BLW 120. LLWS NR TRRN. NC...
 ...ICE AND FZLVL...
 AIRMET ICEOCNL MOD RIME ICEIC 050-160. FZLVL 050. NC...
 .
 KODIAK ISLAND AE...VALID UNTIL 260200
 ...CLOUDS/WX...
 AIRMET MT OBSCMTS OBSCD IN CLDS/PRECIPITATION. NC...
 SCT020 OVC040 LYRD ABV TO FL250 -RA.
 OCNL SCT005 OVC020 VIS 3-5SM -RA BR.
 E SIDE..ISOL CIGS BLW 10 VIS BLW 3SM RA BR.
 SFC WND SE G 25 KT.
 OTLK VALID 260200-262000...MVFR CIG SHRA WND. AFT 06Z..VFR.
 ...TURB...
 NIL SIG.
 ...ICE AND FZ LVL...
 ISOL MOD RIME ICEIC 030-120. FZLVL 030.

7.2 Terminal Aerodrome Forecast (TAF)

A [Terminal Aerodrome Forecast \(TAF\)](#) is a concise statement of the expected meteorological conditions significant to aviation for a specified time period within five statute miles (SM) of the center of the airport's runway complex (terminal). The TAFs use the same weather codes found in METAR weather reports (Section 2) and can be viewed on the National Weather Service (NWS) Aviation Digital Data Service (ADDs) web site at: <http://adds.aviationweather.noaa.gov/tafs/>.

7.2.1 Responsibility

TAFs are issued by NWS Weather Forecast Offices (WFOs). A map of WFO areas of responsibility can be found at: <http://www.srh.noaa.gov/>

7.2.2 Generic Format of the Forecast Text of a NWS-Prepared TAF

Table 7-4. Generic Format of NWS TAFs

TAF or TAF AMD or TAF COR <i>Type of report</i>			
CCCC <i>Location identifier</i>	YYGGggZ <i>Date/time of forecast origin group</i>	Y₁Y₁G₁G₁/Y₂Y₂G₂G₂ <i>Valid period</i>	dddffGf_mf_mKT <i>Wind group</i>
VVVV <i>Visibility group</i>	w'w' or NSW <i>Significant weather group</i>	N_sN_sN_sh_sh_sh_s or VVh_sh_sh_s or SKC <i>Cloud and vertical obscuration groups</i>	WSh_{ws}h_{ws}h_{ws}/dddftKT <i>Non-convective low-level wind shear (LLWS) group</i>
TTGGgg <i>Forecast change indicator groups</i>			
FMY₁Y₁GGgg <i>From group</i>	TEMPO Y₁Y₁GG/Y_eY_eG_eG_e <i>Temporary group</i>	PROB30 Y₁Y₁GG/Y_eY_eG_eG_e <i>Probability group</i>	

7.2.2.1 Type of Report (TAF or TAF AMD or TAF COR)

The report-type header always appears as the first element in the TAF and is produced in three forms: a routine forecast, **TAF**, an amended forecast, **TAF AMD**, or a corrected forecast, **TAF COR**.

TAFs are amended whenever they become, in the forecaster's judgment, unrepresentative of existing or expected conditions, particularly regarding those elements and events significant to aircraft and airports. An amended forecast is identified by **TAF AMD** (in place of **TAF**) on the first line of the forecast text.

7.2.2.2 Location Identifier (CCCC)

After the line containing either **TAF**, **TAF AMD**, or **TAF COR**, each TAF begins with its four-letter International Civil Aviation Organization (ICAO) location identifier.

Examples:

KDFW – Dallas-Fort Worth

PANC – Anchorage, Alaska

PHNL – Honolulu, Hawaii

7.2.2.3 Date/Time of Forecast Origin Group (YYGGggZ)

The date/time of forecast origin group (**YYGGggZ**) follows the terminal's location identifier. It contains the day of the month in two (2) digits (**YY**) and time in four (4) digits (**GGgg** in hours and minutes) the forecast is completed and ready for transmission, with a **Z** appended to denote UTC. This time is entered by the forecaster. A routine forecast, TAF, is issued 20 to 40 minutes before the beginning of its valid period.

Examples

061737Z

The TAF was issued on the 6th day of the month at 1737 UTC.

121123Z

The TAF was issued on the 12th day of the month at 1123 UTC.

7.2.2.4 Valid Period (Y₁Y₁G₁G₁/Y₂Y₂G₂G₂)

The TAF valid period (**Y₁Y₁G₁G₁/Y₂Y₂G₂G₂**) follows the date/time of forecast origin group. Scheduled 24- and 30-hour TAFs are issued four (4) times per day, at 0000, 0600, 1200, and 1800Z. The first two digits (**Y₁Y₁**) are the day of the month for the start of the TAF. The next two digits (**G₁G₁**) are the starting hour (UTC). **Y₂Y₂** is the day of the month for the end of the TAF, and the last two digits (**G₂G₂**) are the ending hour (UTC) of the valid period. A forecast period that begins at midnight UTC is annotated as **00**. If the end time of a valid period is at midnight UTC, it is annotated as **24**. For example, a 00Z TAF issued on the 9th of the month and valid for 24 hours would have a valid period of **0900/0924**.

Whenever an amended TAF (**TAF AMD**) is issued, it supersedes and cancels the previous TAF. That is, users should not wait until the start of the valid period indicated within the TAF AMD to begin using it.

Examples:

1512/1612

The TAF is valid from the 15th day of the month at 1200 UTC until the 16th day of the month at 1200 UTC.

2306/2412

This is a 30-hour TAF valid from the 23rd day of the month at 0600 UTC until the 24th day of the month at 1200 UTC.

0121/0218

This is an amended TAF valid from the 1st day of the month at 2100 UTC until the 2nd day of the month at 1800 UTC.

0600/0624

This TAF is valid from the 6th day of the month at 0000 UTC until the 6th day of the month at 2400 UTC (or 7th day of the month at 0000 UTC).

7.2.2.5 Wind Group (dddffGf_mf_mKT)

The initial time period and any subsequent **FM** groups begin with a mean surface wind forecast (**dddffGf_mf_mKT**) for that period. Wind forecasts are expressed as the mean three-digit direction (**ddd** - relative to true north) from which the wind is blowing, rounded to the nearest ten degrees and the mean wind speed in [knots](#) (**ff**) for the time period. If wind gusts are forecast (gusts are defined as rapid fluctuations in wind speeds with a variation of 10 [knots](#) or more between peaks and lulls), they are indicated immediately after the mean wind speed by the letter **G**, followed by the peak gust speed expected. **KT** is appended to the end of the wind forecast group. Any wind speed of 100 [knots](#) or more will be encoded in three digits. Calm winds are encoded as **00000KT**.

The prevailing wind direction is forecast for any speed greater than or equal to seven (7) [knots](#). When the prevailing surface wind direction is variable (variations in wind direction of 30 degrees or more), the forecast wind direction is encoded as **VRBffKT**. Two conditions where this can occur are very light winds and convective activity. Variable wind direction for very light winds must have a wind speed of one (1) through six (6) [knots](#) inclusive. For convective activity, the wind group may be encoded as **VRBffGf_mf_mKT**, where **Gf_mf_m** is the maximum expected wind gusts. **VRB** is not used in the non-convective LLWS group.

Squalls are forecast in the wind group as gusts (**G**), but must be identified in the significant weather group with the code **SQ**.

Examples:

23010KT

Wind from 230 degrees “true” (southwest) at 10 [knots](#).

28020G35KT

Wind from 280 degrees “true” (west) at 20 [knots](#) gusting to 35 [knots](#).

VRB05KT

Wind variable at 5 [knots](#). This example depicts a forecast for light winds that are expected to variable in direction.

VRB15G30KT

Wind variable at 15 [knots](#) gusting to 30 [knots](#). This example depicts winds that are forecast to be variable with convective activity.

00000KT

Wind calm

090105KT

Wind from 90 degrees at 105 [knots](#)

7.2.2.6 Visibility Group (VVVV)

The initial time period and any subsequent FM groups include a visibility forecast (VVVV) in statute miles appended by the contraction SM.

When the prevailing visibility is forecast to be less than or equal to six (6) SM, one or more significant weather groups are included in the TAF. However, drifting dust (**DRDU**), drifting sand (**DRSA**), drifting snow (**DRSN**), [shallow fog](#) (**MIFG**), partial fog (**PRFG**), and patchy fog (**BCFG**) may be forecast with prevailing visibility greater than or equal to seven (7) statute miles.

When a whole number and a fraction are used to forecast visibility, a space is included between them (e.g., **1 1/2SM**). Visibility greater than six (6) statute miles is encoded as **P6SM**.

If the visibility is not expected to be the same in different directions, prevailing visibility is used.

When volcanic ash (**VA**) is forecast in the significant weather group, visibility is included in the forecast, even if it is unrestricted (**P6SM**). For example, an expected reduction of visibility to 10 statute miles by volcanic ash is encoded in the forecast as **P6SM VA**.

Although not used by the National Weather Service in U.S. domestic TAFs, the contraction “CAVOK” (Ceiling and Visibility OK) may replace the visibility, weather, and sky condition groups if all of the following conditions are forecast: Visibility of 10 kilometer (6 statute miles) or more, no clouds below 1500 meters (5,000 feet) or below the highest minimum sector altitude (whichever is greater), no cumulonimbus, and no significant weather phenomena.

Examples

P6SM

Visibility unrestricted

1 1/2SM

Visibility 1 and ½ statute miles

4SM

Visibility 4 statute miles

7.2.2.7 Significant Weather Group (w'w' or NSW)

The significant weather group (**w'w'** or **NSW**) consists of the appropriate qualifier(s) and weather phenomenon contraction(s) or **NSW** (No significant weather).

If the initial forecast period and subsequent **FM** groups are not forecast to have explicit significant weather, the significant weather group is omitted. **NSW** is **not** used in the initial forecast time period or **FM** groups.

One or more significant weather group(s) is (are) required when the visibility is forecast to be 6SM or less. The exceptions are: volcanic ash (**VA**), low drifting dust (**DRDU**), low drifting sand (**DRSA**), low drifting snow (**DRSN**), [shallow fog](#) (**MIFG**), partial fog (**PRFG**), and patchy fog (**BCFG**). Obstructions to vision are only forecast when the prevailing visibility is less than 7 statute miles or, in the opinion of the forecaster, is considered operationally significant.

Volcanic ash (**VA**) is always forecast when expected. When **VA** is included in the significant weather group, visibility is included in the forecast as well, even if the visibility is unrestricted (**P6SM**).

NSW is used in place of significant weather only in a **TEMPO** group to indicate when significant weather (including in the vicinity (**VC**)) included in a previous sub-divided group is expected to end.

Multiple precipitation elements are encoded in a single group (e.g., -TSRASN). If more than one type of precipitation is forecast, up to three appropriate precipitation contractions can be combined in a single group (with no spaces) with the predominant type of precipitation being first. In this single group, the intensity refers to the total precipitation and can be used with either one or no intensity qualifier, as appropriate. In TAFs, the intensity qualifiers (light, moderate, and heavy) refer to the intensity of the precipitation and not to the intensity of any thunderstorms associated with the precipitation.

Intensity is coded with precipitation types, except ice crystals and hail, including those associated with thunderstorms and those of a showery nature (**SH**). No intensity is ascribed to blowing dust (**BLDU**), blowing sand (**BLSA**), or blowing snow (**BLSN**). Only moderate or heavy intensity is ascribed to [sandstorm](#) (**SS**) and duststorm (**DS**).

7.2.2.7.1 Exception for Encoding Multiple Precipitation Types

When more than one type of precipitation is forecast in a time period, any precipitation type associated with a descriptor (e.g., **FZRA**) is encoded first in the precipitation group, regardless of the predominance or intensity of the other precipitation types. Descriptors are not encoded with the second or third precipitation type in the group. The intensity is associated with the first precipitation type of a multiple precipitation type group. For example, a forecast of moderate snow and light [freezing rain](#) is coded as **-FZRASN** although the intensity of the snow is greater than the [freezing rain](#).

Examples:

Combinations of one precipitation and one non-precipitation weather phenomena:

-DZ FG

Light [drizzle](#) and fog (obstruction which reduces visibility to less than 5/8 SM)

RA BR

Moderate rain and [mist](#)

-SHRA FG

Light rain [showers](#) and fog

+SN FG

Heavy snow and fog

Combinations of more than one type of precipitation:

-RASN FG HZ

Light rain and snow (light rain predominant), fog and [haze](#)

TSSNRA

Thunderstorm with moderate snow and rain (moderate snow predominant)

FZRASNPL

Moderate [freezing rain](#), snow, and ice pellets ([freezing rain](#) mentioned first due to the descriptor, followed by other precipitation types in order of predominance)

SHSNPL

Moderate [snow showers](#) and ice pellets

7.2.2.7.2 Thunderstorm Descriptor

The TS descriptor is treated differently than other descriptors in the following cases:

- When non-precipitating thunderstorms are forecast, TS may be encoded as the sole significant weather phenomenon; and
- When forecasting thunderstorms with freezing precipitation (**FZRA** or **FZDZ**), the **TS** descriptor is included first, followed by the intensity and weather phenomena.

Example:

TS -FZRA

When a thunderstorm is included in the significant weather group (even using vicinity - **VCTS**), the cloud group (**N_sN_sN_sh_sh_sh_s**) includes a forecast cloud type of CB. See the following example for encoding **VCTS**.

Example

-FZRA VCTS BKN010CB

7.2.2.7.3 Fog Forecast

A visibility threshold must be met before a forecast for fog (FG) is included in the TAF. When forecasting a fog-restricted visibility from 5/8SM to 6SM, the phenomena is coded as **BR** ([mist](#)). When a fog-restricted visibility is forecast to result in a visibility of less than 5/8SM, the code **FG** is used. The forecaster never encodes weather obstruction as [mist](#) (**BR**) when the forecast visibility is greater than 6 statute miles (P6SM).

The following fog-related terms are used as described below:

Table 7-5. TAF Fog Terms

TERM	DESCRIPTION
Freezing Fog (FZFG)	Any fog (visibility less than 5/8 SM) consisting predominantly of water droplets at temperatures less than or equal to 32° F/0°C, whether or not rime ice is expected to be deposited. FZBR is not a valid significant weather combination and will not be used in TAFs.
Shallow Fog (MIFG)	The visibility at 6 feet above ground level is greater than or equal to 5/8 SM and the apparent visibility in the fog layer is less than 5/8 SM.
Patchy Fog (BCFG)	Fog patches covering part of the airport. The apparent visibility in the fog patch or bank is less than 5/8 SM, with the foggy patches extending to at least 6 feet above ground level.
Partial Fog (PRFG)	A substantial part of the airport is expected to be covered by fog while the remainder is expected to be clear of fog (e.g., a fog bank). NOTE: MIFG , PRFG and BCFG may be forecast with prevailing visibility of P6SM.

Examples:

1/2SM FG

Fog is reducing visibilities to less than 5/8SM, therefore FG is used to encode the fog.

3SM BR

Fog is reducing visibilities to between 5/8 and 6SM, therefore BR is used to encode the fog.

7.2.2.8 Vicinity (VC)

In the United States, vicinity (**VC**) is defined as a donut-shaped area between 5 and 10SM from the center of the airport's runway complex. The FAA requires TAFs to include certain meteorological phenomena which may directly affect flight operations to and from the airport. Therefore, NWS TAFs may include a prevailing condition forecast of fog, [showers](#) and thunderstorms in the airport's vicinity. A prevailing condition is defined as a greater than or equal to 50% probability of occurrence for more than ½ of the sub-divided forecast time period. **VC** is not included in **TEMPO** or **PROB** groups.

The significant weather phenomena in Table 7-5 are valid for use in prevailing portions of NWS TAFs in combination with **VC**:

Table 7-6: TAF Use of Vicinity (VC)

Phenomenon	Coded
Fog*	VCFG
Shower(s)**	VCSH
Thunderstorm	VCTS
* Always coded as VCFG regardless of visibility in the obstruction, and without qualification as to intensity or type (frozen or liquid)	
** The VC group, if used, should be the last entry in any significant weather group (w'w')	

7.2.2.9 Cloud and Vertical Obscuration Groups ($N_sN_sN_sh_s h_s h_s$ or $VVh_s h_s h_s$ or SKC)

The initial time period and any subsequent **FM** groups include a cloud or [obscuration](#) group ($N_sN_sN_sh_s h_s h_s$ or $VVh_s h_s h_s$ or **SKC**), used as appropriate to indicate the cumulative amount ($N_sN_sN_s$) of all [cloud layers](#) in ascending order and height ($h_s h_s h_s$), to indicate vertical visibility ($VVh_s h_s h_s$) into a surface-based obstructing medium, or to indicate a clear sky (**SKC**). All [cloud layers](#) and [obscurations](#) are considered opaque

7.2.2.9.1 Cloud Group ($N_sN_sN_sh_s h_s h_s$)

The cloud group ($N_sN_sN_sh_s h_s h_s$) is used to forecast cloud amount in Table 7-6.

Table 7-7. TAF Sky Cover

SKY COVER CONTRACTION	SKY COVERAGE
SKC	0 oktas
FEW	0 to 2 oktas
SCT	3 to 4 oktas
BKN	5 to 7 oktas
OVC	8 oktas

When zero (0) oktas of sky coverage is forecast, the cloud group is replaced by **SKC**. The contraction **CLR**, which is used in the METAR code, is not used in TAFs. TAFs for sites with [ASOS/AWOS](#) contain the cloud amount and/or [obscurations](#) which the forecaster expects, not what is expected to be reported by an [ASOS/AWOS](#).

Heights of clouds ($h_s h_s h_s$) are forecast in hundreds of feet [AGL](#).

The lowest level at which the cumulative cloud cover equals 5/8 or more of the celestial dome is understood to be the forecast [ceiling](#). For example, **VV008**, **BKN008** or **OVC008** all indicate an 800 ft [ceiling](#).

7.2.2.9.2 Vertical Obscuration Group ($VVh_s h_s h_s$)

The vertical [obscuration](#) group ($VVh_s h_s h_s$) is used to forecast, in hundreds of feet [AGL](#), the vertical visibility (**VV**) into a surface-based total [obscuration](#). $VVh_s h_s h_s$ is this [ceiling](#) at the height indicated in the forecast. TAFs do not include forecasts of partial [obscurations](#) (i.e., **FEW000**, **SCT000**, or **BKN000**).

Example:

1SM BR VV008

[Ceiling](#) is 800 feet due to vertical visibility into fog

7.2.2.9.3 Cloud Type (CB)

The only cloud type included in the TAF is **CB**. **CB** follows cloud or [obscuration](#) height ($h_s h_s h_s$) without a space whenever thunderstorms are included in significant weather group (**w'w'**), even if thunderstorms are only forecast in the vicinity (**VCTS**). **CB** can be included in the cloud group ($N_sN_sN_sh_s h_s h_s$) or the vertical [obscuration](#) group ($VVh_s h_s h_s$) without mentioning thunderstorm in the significant weather group (**w'w'**). Therefore, situations may occur where nearly identical $N_sN_sN_sh_s h_s h_s$ or $VVh_s h_s h_s$ appear in consecutive time periods, with the only change being the addition or elimination of **CB** in the forecast cloud type.

Examples:

1/2SM TSRA OVC010CB

Thunderstorms are forecast at the airport

7.2.2.10 Non-Convective Low-Level Wind Shear (LLWS) Group (WS_{h_{ws}h_{ws}h_{ws}/dddffKT)}

Wind Shear (WS) is defined as a rapid change in horizontal wind speed and/or direction, with distance and/or a change in vertical wind speed and/or direction with height. A sufficient difference in wind speed, wind direction, or both, can severely impact airplanes, especially within 2,000 feet AGL because of limited vertical airspace for recovery.

Forecasts of LLWS in the TAF refer only to non-convective LLWS from the surface up to and including 2,000 feet AGL. LLWS is always assumed to be present in convective activity. LLWS is included in TAFs on an “as-needed” basis to focus the aircrew’s attention on LLWS problems which currently exist or are expected. Non-convective LLWS may be associated with the following: frontal passage, inversion, low-level jet, lee side mountain effect, sea breeze front, Santa Ana winds, etc.

When LLWS conditions are expected, the non-convective LLWS code **WS** is included in the TAF as the last group (after cloud forecast). Once in the TAF, the **WS** group remains the prevailing condition until the next **FM** change group or the end of the TAF valid period if there are no subsequent **FM** groups. Forecasts of non-convective LLWS are not included in **TEMPO** or **PROB** groups.

The format of the non-convective low-level wind shear group is:

WS_{h_{ws}h_{ws}h_{ws}/dddffKT}

WS - Indicator for non-convective LLWS

{h{ws}h_{ws}h_{ws}} - Height of the top of the WS layer in hundreds of feet AGL

ddd - True direction in ten degree increments at the indicated height

-- **VRB** is not used for direction in the non-convective LLWS forecast group.

ff - Speed in knots of the forecast wind at the indicated height

KT - Unit indicator for wind

Example:

TAF...13012KT...WS020/27055KT

Wind shear from the surface to 2,000 feet. Surface winds from 130 (southeast) at 12 knots changes to 270 (west) at 55 knots at 2,000 feet.

In this example the indicator **WS** is followed by a three-digit number which is the top of the wind shear layer. LLWS is forecast to be present from the surface to this level. After the solidus /, the five digit wind group is the wind direction and speed at the top of the wind shear layer. It is not a value for the amount of shear.

A non-convective LLWS forecast is included in the initial time period or a **FM** group in a TAF whenever:

- One or more PIREPs are received of non-convective LLWS within 2,000 feet of the surface, at or in the vicinity of the TAF airport, causing an indicated air speed loss or

gain of 20 [knots](#) or more, and the forecaster determines the report(s) reflect a valid non-convective LLWS event rather than mechanical [turbulence](#), or

- When non-convective vertical **WS** of 10 [knots](#) or more per 100 feet in a layer more than 200 feet thick are expected or reliably reported within 2,000 feet of the surface at, or in the vicinity of, the airport.

7.2.2.11 Forecast Change Indicator Groups

Forecast change indicator groups are contractions which are used to sub-divide the forecast period (24-hours for scheduled TAFs; less for amended or delayed forecasts) according to significant changes in the weather.

The forecast change indicators, FM, TEMPO, and PROB, are used when a change in any or all of the elements forecast is expected:

7.2.2.11.1 From (FM) Group (FMYGGgg)

The change group **FMYGGgg** (voiced as “from”) is used to indicate when prevailing conditions are expected to change significantly over a period of less than one hour. In these instances, the forecast is sub-divided into time periods using the contraction **FM**, followed, without a space, by six digits, the first two of which indicate the day of the month and the final four which indicate the time (in hours and minutes Z) the change is expected to occur. While the use of a four-digit time in whole hours (e.g. 2100Z) is acceptable, if a forecaster can predict changes and/or events with higher resolution, then more precise timing of the change to the minute will be indicated. All forecast elements following **FMYGGgg** relate to the period of time from the indicated date and time (**YYGGgg**) to the end of the valid period of the terminal forecast, or to the next **FM** if the terminal forecast valid period is divided into additional periods.

The **FM** group will be followed by a complete description of the weather (i.e., self-contained) and all forecast conditions given before the **FM** group are superseded by those following the group. All elements of the TAF (surface wind, visibility, significant weather, clouds, [obscurations](#), and when expected, non-convective LLWS) will be included in each **FM** group, regardless if they are forecast to change or not. For example, if forecast cloud and visibility changes warrant a new **FM** group but the wind does not, the new **FM** group will include a wind forecast, even if it is the same as the most recently forecast wind.

The only exception to this involves the significant weather group. If no significant weather is expected in the **FM** time period group, then significant weather group is omitted. A TAF may include one or more **FM** groups, depending on the prevailing weather conditions expected. In the interest of clarity, each **FM** group starts on a new line of forecast text, indented five spaces.

Examples:

TAF

```
KDSM 022336Z 0300/0324 20015KT P6SM BKN015
      FM030230 29020G35KT 1SM +SHRA OVC005
      TEMPO 0303/0304 30030G45KT 3/4SM -SHSN
      FM030500 31010G20KT P6SM SCT025...
```

A change in the prevailing weather is expected on the 3rd day of the month at **0230** UTC and the 3rd day of the month at **0500** UTC.

TAF

KAPN 312330Z 0100/0124 13008KT P6SM SCT030
FM010320 31010KT 3SM -SHSN BKN015
FM010500 31010KT 1/4SM +SHSN VV007...

Note the wind in the **FM010500** group is the same as the previous **FM** group, but is repeated since all elements are required to be included in a **FM** group.

7.2.2.11.2 TEMPO (YYGG/Y_eY_eG_eG_e) Group

The change-indicator group **TEMPO YYGG/Y_eY_eG_eG_e** is used to indicate temporary fluctuations to forecast meteorological conditions which are expected to:

- Have a high percentage (greater than 50%) probability of occurrence,
- Last for one hour or less in each instance and,
- In the aggregate, cover less than half of the period **YYGG** to **Y_eY_eG_eG_e**

The first two digits (**YY**) are the day of the month for the start of the TEMPO. The next two digits (**GG**) are the starting hour (UTC). After the solidus (**/**), the next two digits (**Y_eY_e**) are the ending day of the month, while the last two digits (**G_eG_e**) are the ending hour (UTC) of the TEMPO period.

Each **TEMPO** group is placed on a new line in the TAF. The **TEMPO** identifier is followed by a description of all the elements in which a temporary change is forecast. A previously forecast element which has not changed during the **TEMPO** period is understood to remain the same and will not be included in the **TEMPO** group. Only those weather elements forecast to temporarily change are required to be included in the **TEMPO** group.

TEMPO groups will not include forecasts of either significant weather in the vicinity (**VC**) or non-convective LLWS.

Examples:

TAF

KDDC 221130Z 2212/2312 29010G25KT P6SM SCT025
TEMPO 2215/2217 30025G35KT 1 1/2SM SHRA BKN010...

In the example, all forecast elements in the TEMPO group are expected to be different than the prevailing conditions. The TEMPO group is valid on the 17 from 1500 UTC to 1700 UTC.

TAF

KSEA 091125Z 0912/1012 19008KT P6SM SCT010 BKN020 OVC090
TEMPO 0912/0915 -RA SCT010 BKN015 OVC040...

In this example the visibility is **not** forecast in the TEMPO group. Therefore, the visibility is expected to remain the same (P6SM) as forecast in the prevailing conditions group. Also, note that in the TEMPO 0912/0915 group, all three [cloud layers](#) are included, although the lowest layer is not forecast to change from the initial time period.

7.2.2.11.3 PROB30 (YYGG/Y_eY_eG_eG_e) Group

The probability group, **PROB30 YYGG/Y_eY_eG_eG_e**, is only used by NWS forecasters to forecast a low probability occurrence (30% chance) of a thunderstorm or precipitation event and its associated weather and [obscuration](#) elements (wind, visibility and/or sky condition) at an airport.

The **PROB30** group is the forecaster's assessment of probability of occurrence of the weather event which follows it. The first two digits (**YY**) are the day of the month for the start of the PROB30. The next two digits (**GG**) are the starting hour (UTC). After the solidus (**/**), the next two digits (**Y_eY_e**) are the ending day of the month, while the last two digits (**G_eG_e**) are the ending hour (UTC) of the PROB30 period. **PROB30** is the only **PROB** group used in NWS TAFs. Note that U.S. military and international TAFs may use the PROB40 (40% chance) group as well.

The **PROB30** group is located within the same line of the prevailing condition group, continuing on the line below if necessary.

The **PROB30** group may not be used in the first nine (9) hours of the TAF's valid period, including amendments. Also, only one **PROB30** group may be used in the initial forecast period and in any subsequent **FM** groups. Note that U.S. military and international TAFs do not have these restrictions.

PROB30 groups do not include forecasts of significant weather in the vicinity (**VC**) or non-convective LLWS.

Example:

FM012100 18015KT P6SM SCT050 PROB30 0123/0201 2SM TSRA OVC020CB

In this example, the PROB30 group is valid on the 1st day of the month at 2300 UTC to the 2nd day of the month at 0100 UTC.

7.2.2.12 TAF Examples

TAF

KPIR 111140Z 1112/1212 13012KT P6SM BKN100 WS020/35035KT
 TEMPO 1112/1114 5SM BR
 FM111500 16015G25KT P6SM SCT040 BKN250
 FM120000 14012KT P6SM BKN080 OVC150 PROB30 1200/1204 3SM TSRA
 BKN030CB
 FM120400 14008KT P6SM SCT040 OVC080 TEMPO 1204/1208 3SM TSRA
 OVC030CB

TAF> Terminal Aerodrome Forecast
KPIR> Pierre, South Dakota
111140> prepared on the 11th at 1140 UTC
1112/1212> valid from the 11th at 1200 UTC until the 12th at 1200 UTC
13012KT> wind 130 at 12 [knots](#)
P6SM> visibility greater than 6 statute miles
BKN100> [ceiling](#) 10,000 broken
WS020/35035KT> [wind shear](#) at 2,000 feet, wind from 350 at 35 [knots](#)
TEMPO 1112/1114> temporary conditions between the 11th day of the month at 1200 UTC and
 the 11th day of the month at 1400 UTC
5SM> visibility 5 statute miles
BR> [mist](#)
FM111500> from the 11th day of the month at 1500 UTC
16015G25KT> wind 160 at 15 [knots](#) gusting to 25 [knots](#)
P6SM> visibility greater than 6 statute miles
SCT040 BKN250> 4,000 scattered, [ceiling](#) 25,000 broken
FM120000> from the 12th day of the month at 0000Z
14012KT> wind 140 at 12 [knots](#)
P6SM> visibility greater than 6 statute miles
BKN080 OVC150> [ceiling](#) 8,000 broken, 15,000 overcast
PROB30 1200/1204> 30% probability between the 12th day of the month at 0000 UTC and the
 12th day of the month at 0400 UTC
3SM> visibility 3 statute miles
TSRA> thunderstorm with moderate rain [showers](#)
BKN030CB> [ceiling](#) 3,000 broken with cumulonimbus
FM120400> from the 12th day of the month at 0400 UTC
14008KT> wind 140 at 8 [knots](#)
P6SM> visibility greater than 6 statute miles
SCT040 OVC080> 4,000 scattered, [ceiling](#) 8,000 overcast
TEMPO 1204/1208> temporary conditions between the 12th day of the month at 0400 UTC and
 the 12th day of the month at 0800 UTC
3SM> visibility 3 statute miles
TSRA> thunderstorms with moderate rain [showers](#)
OVC030CB> [ceiling](#) 3,000 overcast with cumulonimbus

TAF AMD

KEYW 131555Z 1316/1412 VRB03KT P6SM VCTS SCT025CB BKN250
TEMPO 1316/1318 2SM TSRA BKN020CB
FM131800 VRB03KT P6SM SCT025 BKN250 TEMPO 1320/1324 1SM TSRA
OVC010CB
FM140000 VRB03KT P6SM VCTS SCT020CB BKN120 TEMPO 1408/1412
BKN020CB

TAF AMD> Amended Terminal Aerodrome Forecast
KEYW> Key West, Florida
131555Z> prepared on the 13th at 1555 UTC
1316/1412> valid from the 13th at 1600 UTC until the 14th at 1200 UTC
VRB03KT> wind variable at 3 [knots](#)
P6SM> visibility greater than 6 statute miles
VCTS> thunderstorms in the vicinity
SCT025CB BKN250.....> 2,500 scattered with cumulonimbus, [ceiling](#) 25,000 broken
TEMPO 1316/1318.....> temporary conditions between the 13th day of the month at 1600 UTC and
the 13th day of the month at 1800 UTC
2SM> visibility 2 statute miles
TSRA> thunderstorms with moderate rain [showers](#)
BKN020CB> [ceiling](#) 2,000 broken with cumulonimbus
FM131800.....> from the 13th day of the month at 1800 UTC
VRB03KT> wind variable at 3 [knots](#)
P6SM> visibility greater than 6 statute miles
SCT025 BKN250.....> 2,500 scattered, [ceiling](#) 25,000 broken
TEMPO 1320/1324.....> temporary conditions between the 13th day of the month at 2000 UTC and
the 14th day of the month at 0000 UTC
1SM> visibility 1 statute mile
TSRA> thunderstorms with moderate rain [showers](#)
OVC010CB> [ceiling](#) 1,000 overcast with cumulonimbus
FM140000.....> from the 14th day of the month at 0000 UTC
VRB03KT> variable wind at 3 [knots](#)
P6SM> visibility greater than 6 statute miles
VCTS> thunderstorms in the vicinity
SCT020CB BKN120.....> 2,000 scattered with cumulonimbus, [ceiling](#) 12,000 broken
TEMPO 1408/1412.....> temporary conditions between the 14th day of the month at 0800 UTC and
the 14th day of the month at 1200 UTC
BKN020CB> [ceiling](#) 2,000 broken with cumulonimbus

TAF

KCRP 111730Z 1118/1218 19007KT P6SM SCT030
 TEMPO 1118/1120 BKN040
 FM112000 16011KT P6SM VCTS FEW030CB SCT250
 FM120200 14006KT P6SM FEW025 SCT250
 FM120800 VRB03KT 5SM BR SCT012
 FM121500 17007KT P6SM SCT025

TAF> Terminal Aerodrome Forecast
KCRP> Corpus Christi, Texas
111730Z> prepared on the 11th at 1730 UTC
1118/1218> valid from the 11th at 1800 UTC until the 12th at 1800 UTC
19007KT> wind 190 at 7 [knots](#)
P6SM> visibility greater than 6 statute miles
SCT030> 3,000 scattered
TEMPO 1118/1120> temporary conditions between 1800 UTC and 2000 UTC on the 11th.
BKN040> [ceiling](#) 4,000 broken
FM112000> from the 11th day of the month at 2000 UTC
16011KT> wind 160 at 11 [knots](#)
P6SM> visibility greater than 6 statute miles
VCTS> thunderstorms in the vicinity
FEW030CB SCT250> 3,000 [few](#) with cumulonimbus, 25,000 scattered
FM120200> from the 12th day of the month at 0200 UTC
14006KT> wind 140 at 6 [knots](#)
P6SM> visibility greater than 6 statute miles
FEW025 SCT250> 2,500 [few](#), 25,000 scattered
FM120800> from the 12th day of the month at 0800 UTC
VRB03KT> wind variable at 3 [knots](#)
5SM> visibility 5 statute miles
BR> [mist](#)
SCT012> 1,200 scattered
FM121500> from the 12th day of the month at 1500 UTC
17007KT> wind 170 at 7 [knots](#)
P6SM> visibility greater than 6 statute miles
SCT025> 2,500 scattered

7.2.3 Issuance

Scheduled TAFs prepared by NWS offices are issued four times a day, every six (6) hours, according to the following schedule:

Table 7-8. TAF Issuance Schedule

SCHEDULED ISSUANCE	VALID PERIOD	ISSUANCE WINDOW
0000 UTC	0000 to 2400 UTC	2320 to 2340 UTC
0600 UTC	0600 to 0600 UTC	0520 to 0540 UTC
1200 UTC	1200 to 1200 UTC	1120 to 1140 UTC
1800 UTC	1800 to 1800 UTC	1720 to 1740 UTC

7.2.3.1 Minimum Observational Requirements for Routine TAF Issuance and Continuation

The NWS WFO aviation forecaster must have certain information for the preparation and scheduled issuance of each individual TAF. Although integral to the TAF writing process, a complete surface (METAR/SPECI) observation is not required. Forecasters use the "total observation concept" to write TAFs with data including nearby surface observations, radar, satellite, radiosonde, model data, aircraft, and other sources.

If information sources, such as surface observations, are missing, unreliable, or not complete, forecasters will append **AMD NOT SKED** to the end of a TAF. The use of AMD NOT SKED indicates the forecaster has enough data, using the total observation concept, to issue a forecast but will not provide updates. This allows airport operations to continue using a valid TAF.

In rare situations where observations have been missing for extended periods of time (i.e., more than one TAF cycle of six hours), and the total observation concept cannot provide sufficient information, the TAF may be suspended by the use of **NIL TAF**.

7.2.3.2 Sites with Scheduled Part-Time Observations

For TAFs with less than 24-hour observational coverage, the TAF will be valid to the end of the routine scheduled forecast period even if observations cease prior to that time. The time observations are scheduled to end and/or resume will be indicated by expanding the **AMD NOT SKED** statement. Expanded statements will include the observation ending time (**AFT Y₁Y₁HHmm**, e.g., AFT 120200), the scheduled observation resumption time (**TIL Y₁Y₁HHmm**, e.g., TIL 171200Z) or the period of observation unavailability (**Y₁Y₁HH/Y_eY_ehh**, e.g., 2502-2512). TIL will be used only when the beginning of the scheduled TAF valid period coincides with the time of the last observation or when observations are scheduled to resume prior to the next scheduled issuance time. When used, these remarks will immediately follow the last forecast group. If a routine TAF issuance is scheduled to be made after observations have ceased, but before they resume, the remark **AMD NOT SKED** will immediately follow the valid period group of the scheduled issuance. After sufficient data using the total observation concept has been received, the **AMD NOT SKED** remark will be removed.

7.2.3.2.1 Examples of Scheduled Part-Time Observations TAFs

TAF AMD

KRWF 150202Z 1502/1524 {TAF text}

AMD NOT SKED 1505Z-1518Z=

No amendments will be available between the 15th day of the month at 0500 UTC and the 15th day of the month at 1800 UTC due to lack of a complete observational set between those times.

TAF AMD

KPSP 190230Z 1903/1924 {TAF text}

AMD NOT SKED=

Amendments are not scheduled.

7.2.3.3 Automated Observing Sites Requiring Part-Time Augmentation

TAFs for [AWOS](#)-III sites which have part-time augmentation are prepared using the procedures for part-time manual observation sites detailed in the previous section, with one exception. This exception is the remark used when the automated system is unattended. Specifically, the time an augmented automated system is scheduled to go into unattended operation and/or the time augmentation resumes is included in a remark unique to automated observing sites: **AMD LTD TO CLD VIS AND WIND (AFT YYHHmm, or TIL YYhhmm, or YYHH-YYhh)**, where YY is the date, HHmm is the time, in hours and minutes, of last augmented observation and hhmm is the time, in hours and minutes, the second complete observation is expected to be received. This remark, which does not preclude amendments for other forecast elements, is appended to the last scheduled TAF issued prior to the last augmented observation. It will also be appended to all subsequent amendments until augmentation resumes.

The **AMD LTD TO** (elements specified) remark is a flag for users and differs from the **AMD NOT SKED AFT Z** remark for part-time manual observation sites. **AMD LTD TO** (elements specified) means users should expect amendments only for those elements and the times specified.

Example:

```
TAF AMD
KCOE 150202Z 1502/1524 text
    AMD LTD TO CLD VIS AND WIND 1505-1518=
```

The amended forecast indicates that amendments will only be issued for wind, visibility and clouds, between the 15th day of the month at 0500Z and the 15th day of the month at 1800Z.

An amendment includes forecasts for all appropriate TAF elements, even those not reported when the automated site is not augmented. If unreported elements are judged crucial to the TAF and cannot be adequately determined (e.g., fog versus moderate snow), the TAF will be suspended (i.e. an amended TAF stating "**AMD NOT SKED**").

[AWOS](#)-III systems with part-time augmentation, which the forecaster suspects are providing unreliable information when not augmented, will be reported for maintenance and treated the same as part-time manual observation sites. In such cases, the **AMD NOT SKED AFT YY/aaZ** remark will be used.

7.2.3.4 Non-Augmented Automated Observing Sites

The TAF issued for a non-augmented [ASOS](#) site may be suspended in the event the forecaster is notified of, or strongly suspects, an outage or unrepresentative data. Forecasters may also suspend TAF amendments when an element the forecaster judges to be critical is missing from the observation and cannot be obtained using the total observation concept. The term **AMD NOT SKED** will be appended, on a separate line and indented five spaces, to the end of an amendment to the existing TAF when appropriate.

7.3 International Aviation Route Forecasts (ROFOR)

International ROFORs are prepared and issued several hours in advance of regularly scheduled flights. The only NWS office which routinely issues ROFORs is the Weather Forecast Office (WFO) in Honolulu due to its designation as an ICAO Meteorological Watch Office (MWO).

7.3.1 ROFOR Criteria

WFO Honolulu will honor all ROFOR requests for flights within the Pacific Region beginning or ending in, or having most of the flight path within its area of responsibility, which is the Oakland Oceanic FIR south of 30N, between 140W and 130E.

7.3.2 Issuance

ROFORs are issued for prescribed times, several hours in advance, for regularly scheduled flights. ROFOR requests for unscheduled flights are prepared as soon as time allows.

7.3.2.1 ROFOR Amendments

ROFORs are not required to be amended.

7.3.2.2 ROFOR Corrections

ROFOR corrections are issued as soon as possible when erroneous data has been transmitted.

7.3.3 ROFOR Content

ROFORs contain some or all of the following forecast parameters:

- Winds and temperatures aloft
- Significant en-route weather
- Zone weather
- Weather Synopsis

At a minimum, ROFORs include the first two bullets. They may contain data for multiple altitudes and include TAFs for destination points and/or alternates.

The core of a ROFOR is formatted as follows: **0iQLL 4hhhTT ddFFF**

Where **i** = 1 for zone up to latitude **L**
 i = 2 for zone up to longitude **LL**

Q = 1 east of the dateline in the northern hemisphere

Q = 2 west of the dateline in the northern hemisphere

Q = 6 east of the dateline in the southern hemisphere

Q = 7 west of the dateline in the southern hemisphere

hhh = height to which the temperature and wind refer

TT = air temperature in whole degrees Celsius at hhh

dd = true direction in tens of degrees from which the wind will blow at hhh

fff = wind speed in know at hhh

01104 4300M31 10010

Decoded as: The 30,000 foot wind (10010) and temperature (M31) are for that zone along the flight path from the equator to 05N east of the dateline.

Note: Refer to Appendix A for definitions of common terms used in ROFORs.

7.3.4 ROFOR Examples

7.3.4.1 Santa Barbara and San Francisco to Honolulu Route ROFOR Example

FRPN31 PHFO 301857

RFRKSF

WINDS/TEMPERATURES AND WEATHER BY ZONE FOR

ROUTE SFO/HNL VIA 31.3N/140W VALID AT 311200Z

FLIGHT LEVELS

ZONE	FL050	FL100	FL180	FL240	ZONE WEATHER
25	3315 P16	3208 P11	3109 M07	3216 M19	6-8 STSC 010/030
26	3316 P13	3211 P09	3117 M06	3023 M18	4-6 STSC 015/045
27	3013 P12	3212 P09	3020 M06	3024 M18	6-8 MERGING LVR TO 200 ISOL VIS 3-5SM RA ISOL TCU TOPS FL220
28	3008 P14	3008 P08	2815 M06	2918 M18	DO
29	9905 P14	9905 P08	2609 M06	2612 M18	4-6 CUSC 020/050
30	0506 P14	9905 P08	9905 M06	2406 M18	DO
31	0818 P15	0613 P09	0307 M06	9905 M18	4-6 CUSC 020/080 ISOL -SHRA
32	0822 P15	0719 P09	0711 M05	9905 M17	DO

OVERALL COMPONENTS

P4 P2 M4 M10

ROUTE SBA/HNL VIA 29.5N/140W VALID AT 311200Z

FLIGHT LEVELS

ZONE	FL050	FL100	FL180	FL240	ZONE WEATHER
25	3509 P17	3108 P11	3011 M07	3015 M19	6-8 STSC 010/030
26	3416 P14	3312 P09	3218 M05	3123 M18	4-6 STSC 015/045
27	0111 P13	3510 P10	3017 M05	3021 M18	2-4 CUSC 020/045
28	0307 P14	3606 P09	2713 M05	2717 M18	DO
29	0406 P14	9905 P08	2507 M05	2610 M18	4-6 CUSC 020/050
30	0815 P15	0610 P09	9905 M05	9905 M17	DO
31	0821 P15	0616 P09	0408 M05	9905 M18	4-6 CUSC 020/080 ISOL -SHRA
32	0822 P15	0719 P09	0812 M06	9905 M18	DO

OVERALL COMPONENTS

P10 P5 M4 M7

SYNOPSIS...1024MB HIGH CENTERED NEAR N3000 W15600.

7.4 Wind and Temperature Aloft Forecast (FB)

Wind and Temperature Aloft Forecasts (FB) are computer prepared forecasts of wind direction, wind speed, and temperature at specified times, altitudes, and locations. Forecasts are based on the North American Mesoscale (NAM) forecast model run. FBs are available on the Aviation Weather Center (AWC) web site at: <http://aviationweather.gov/products/nws/winds/>

7.4.1 Forecast Altitudes

The following table contains the altitudes for which winds are forecast. Altitudes up to 15,000 feet are referenced to Mean Sea Level (MSL). Altitudes at or above 18,000 feet are references to flight levels (FL).

Table 7-9. Wind and Temperature Aloft Forecast Levels

Actual Altitudes (MSL)	
1,000 feet*	
1,500 feet*	
2,000 feet*	
3,000 feet	
6,000 feet	
9,000 feet	
12,000 feet	
15,000 feet*	
Pressure Altitudes (Hectopascals)	
18,000 feet (500 Hectopascals)	
24,000 feet (400 Hectopascals)	
30,000 feet (300 Hectopascals)	
34,000 feet (250 Hectopascals)	
39,000 feet (200 Hectopascals)	
45,000 feet (150 Hectopascals)#	
53,000 feet (100 Hectopascals)#	
* Hawaii and Western Pacific only.	
# Not available for selected locations in the Contiguous US.	

Wind forecasts are not issued for altitudes within 1,500 feet of a location's elevation. Temperature forecasts are not issued for altitudes within 2,500 feet of a location's elevation. Forecasts for intermediate levels are determined by interpolation.

7.4.2 Format

The symbolic form of the forecasts is **DDff+TT** in which **DD** is the wind direction, **ff** the wind speed, and **TT** the temperature.

Wind direction is indicated in tens of degrees (two digits) with reference to true north and wind speed is given in [knots](#) (two digits). Light and variable wind or wind speeds of less than 5 [knots](#) are expressed by **9900**. Forecast wind speeds of 100 through 199 [knots](#) are indicated by subtracting 100 from the speed and adding 50 to the coded direction. For example, a forecast

of 250 degrees, 145 [knots](#), is encoded as **7545**. Forecast wind speeds of 200 [knots](#) or greater are indicated as a forecast speed of 199 [knots](#). For example, **7799** is decoded as 270 degrees at 199 [knots](#) or greater.

Temperature is indicated in degrees Celsius (two digits) and is preceded by the appropriate algebraic sign for the levels from 6,000 through 24,000 feet. Above 24,000 feet, the sign is omitted since temperatures are always negative at those altitudes.

The product header includes the date and time observations were collected, the forecast valid date and time, and the time period during which the forecast is to be used.

Examples

1312+05

The wind direction is from 130 degree (i.e. - southeast), the wind speed is 12 [knots](#) and the temperature is 5 degrees Celsius.

9900+10

Wind light and variable, temperature +10 degrees.

7735-07

The wind direction is from 270 degrees (i.e. west), the wind speed is 135 [knots](#) and the temperature is minus 7 degrees Celsius.

7.4.2.1 Coding Example

Sample winds aloft text message:

DATA BASED ON 010000Z

VALID 010600Z FOR USE 0500-0900Z. TEMPS NEG ABV 24000

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000

MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252

Sample message decoded:

(Line 1) **DATA BASED ON 010000Z**

Forecast data is based on computer forecasts generated the first day of the month at 0000 UTC.

(Line 2) **VALID 010600Z FOR USE 0500-0900Z. TEMPS NEG ABV 24000**

The valid time of the forecast is the 1st day of the month at 0600 UTC. The forecast winds and temperature are to be used between 0500 and 0900 UTC. Temperatures are negative above 24,000 feet.

(Line 3)

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000

FT indicates the altitude of the forecast.

(Line 4)

MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252

MKC indicates the location of the forecast. The rest of the data is the winds and temperature aloft forecast for the respective altitudes.

The following table shows data for MKC (Kansas City, MO).

Table 7-10. Wind and Temperature Aloft Forecast Decoding Examples

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000			
MKC 9900 1709+06 2018+00 2130-06 2242-18 2361-30 247242 258848 550252			
Altitude (feet)	Coded	Wind	Temperature (°C)
3,000 FT	9900	Light and variable	Not forecast
6,000 FT	1709+06	170 degrees at 9 knots	+06 degrees Celsius
9,000 FT	2018+00	200 degrees at 18 knots	Zero degrees Celsius
12,000 FT	2130-06	210 degrees at 30 knots	-06 degrees Celsius
18,000 FT	2242-18	220 degrees at 42 knots	-18 degrees Celsius
24,000 FT	2361-30	230 degrees at 61 knots	-30 degrees Celsius
30,000 FT	247242	240 degrees at 72 knots	-42 degrees Celsius
34,000 FT	258848	250 degrees at 88 knots	-48 degrees Celsius
39,000 FT	750252	250 degrees at 102 knots	-52 degrees Celsius

7.4.2.2 Example for the Contiguous US and Alaska

DATA BASED ON 091200Z

VALID 091800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

```

FT 3000 6000 9000 12000 18000 24000 30000 34000 39000
ABI 1931+10 1929+10 2024+06 2331-10 2448-23 235239 246348 256056
ABQ 2213+03 2327-04 2253-17 2263-27 227242 236946 245749
ABR 2017 2312+14 2308+09 2615+02 2724-13 2527-26 273641 274051 274562
AGC (etc.)

```

```

FT 45000 53000
ABI 301049 281149
ABQ 235061 244859
ABR 224559 243756
AGC (etc.)

```

Note: 45,000- and 53,000-foot winds are not available for selected locations in the conterminous US.

7.4.2.3 Example for Hawaii and the Western Pacific

DATA BASED ON 091200Z

VALID 091800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

```

FT 1000 1500 2000 3000 6000 9000 12000 15000 18000 24000
LIH 9900 9900 1705 1806 1711+13 2216+10 2520+05 2523+01 2833-07 2937-19
HNL 9900 9900 9900 9900 1407+14 1908+11 2410+05 2612+01 2928-07 2930-18
LNY 9900 9900 9900 9900 1208+14 9900+11 9900+06 2909+01 3024-07 3027-18
OGG (etc.)

```

```

FT 30000 34000 39000 45000 53000
LIH 040734 990044 241055 281666 990072
HNL 051234 010543 250654 301066 990072

```

LNK 041433 010743 230754 260966 990072
OGG (etc)

Note: The altitudes forecast in the Hawaii and western Pacific bulletins are different than those forecast in the Contiguous US and Alaska

Note: The Hawaii and western Pacific bulletins are separated at the 24,000 foot level instead of 39,000 feet because of the additional, lower levels noted in Table 7-8.

7.4.3 Issuance

The NWS National Centers for Environmental Prediction (NCEP) produces scheduled Wind and Temperature Aloft Forecasts (**FB**) four (4) times daily for specified locations in the Continental United States (CONUS), the Hawaiian Islands, Alaska and coastal waters, and the western Pacific Ocean (Figures 7-8 through 7-11).

Amendments are not issued to the forecasts.

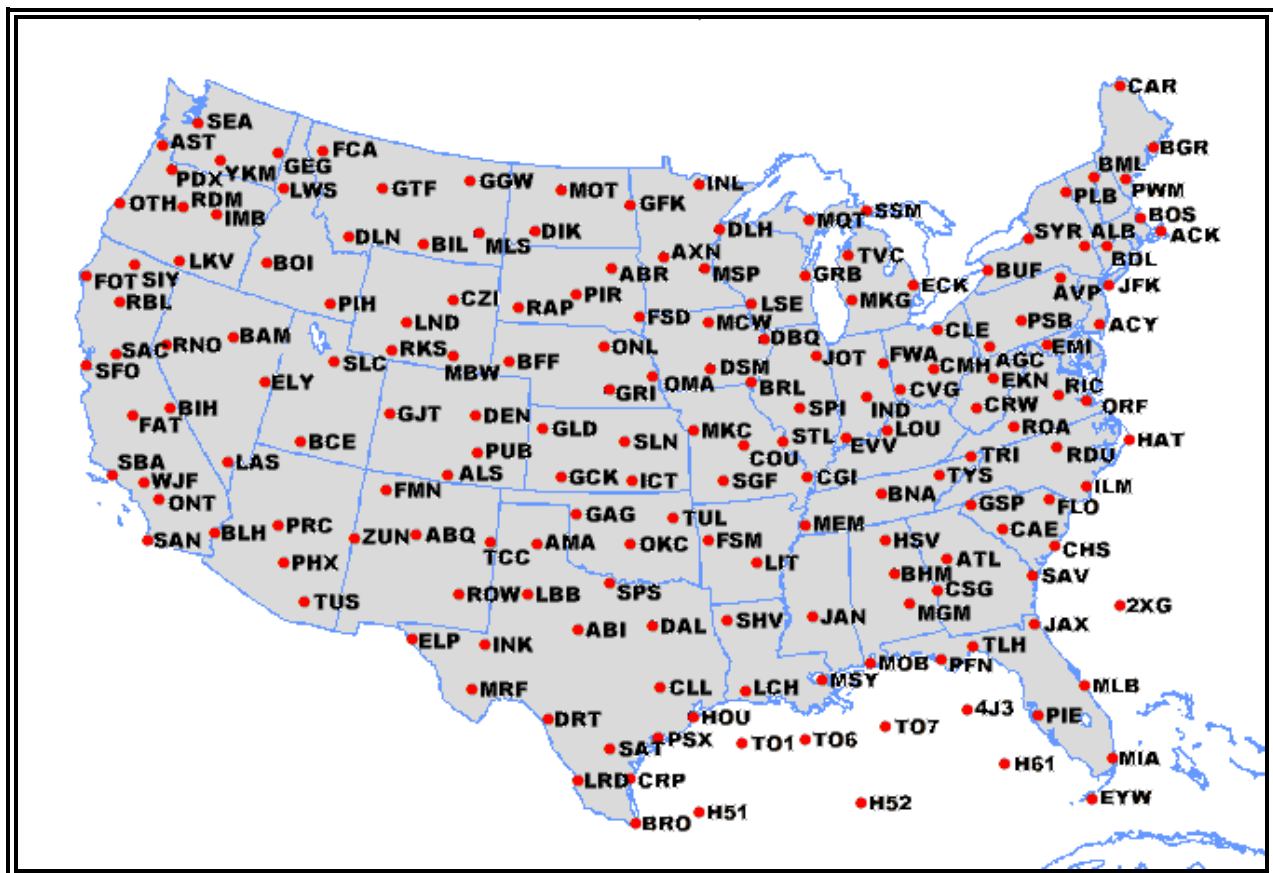
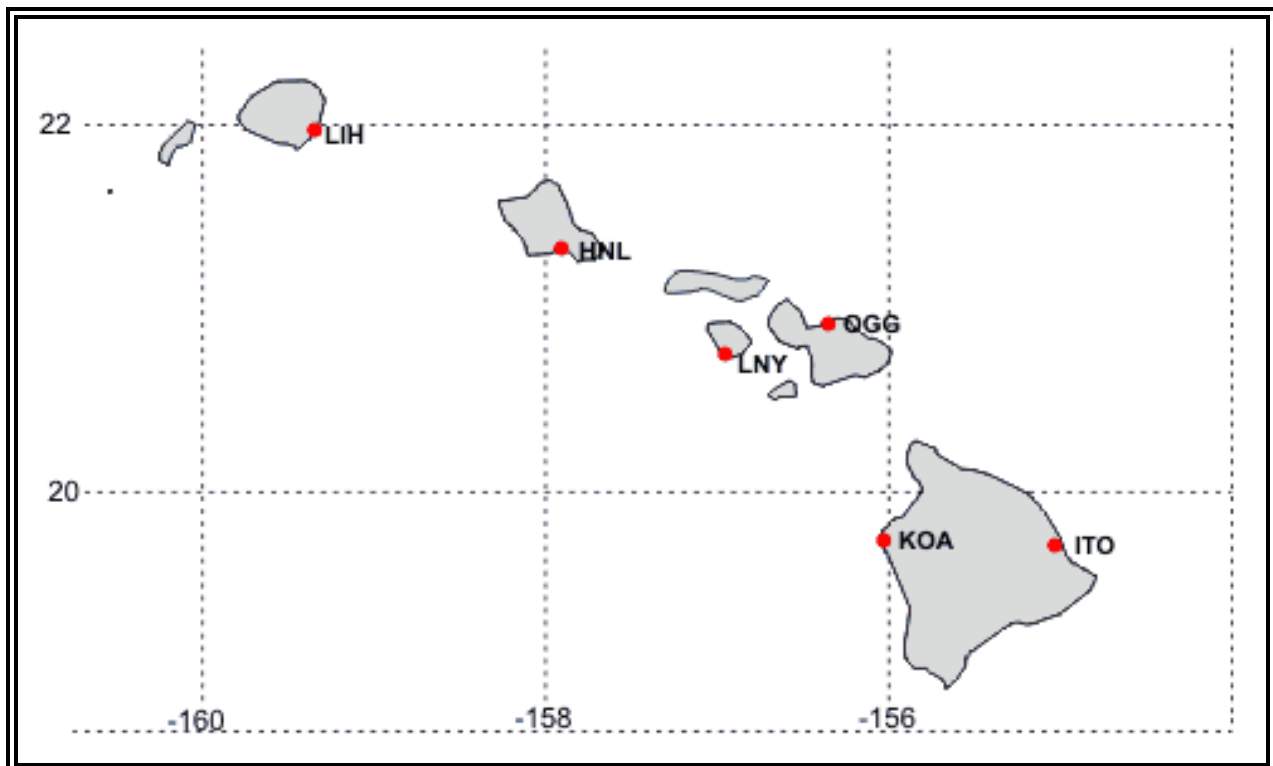
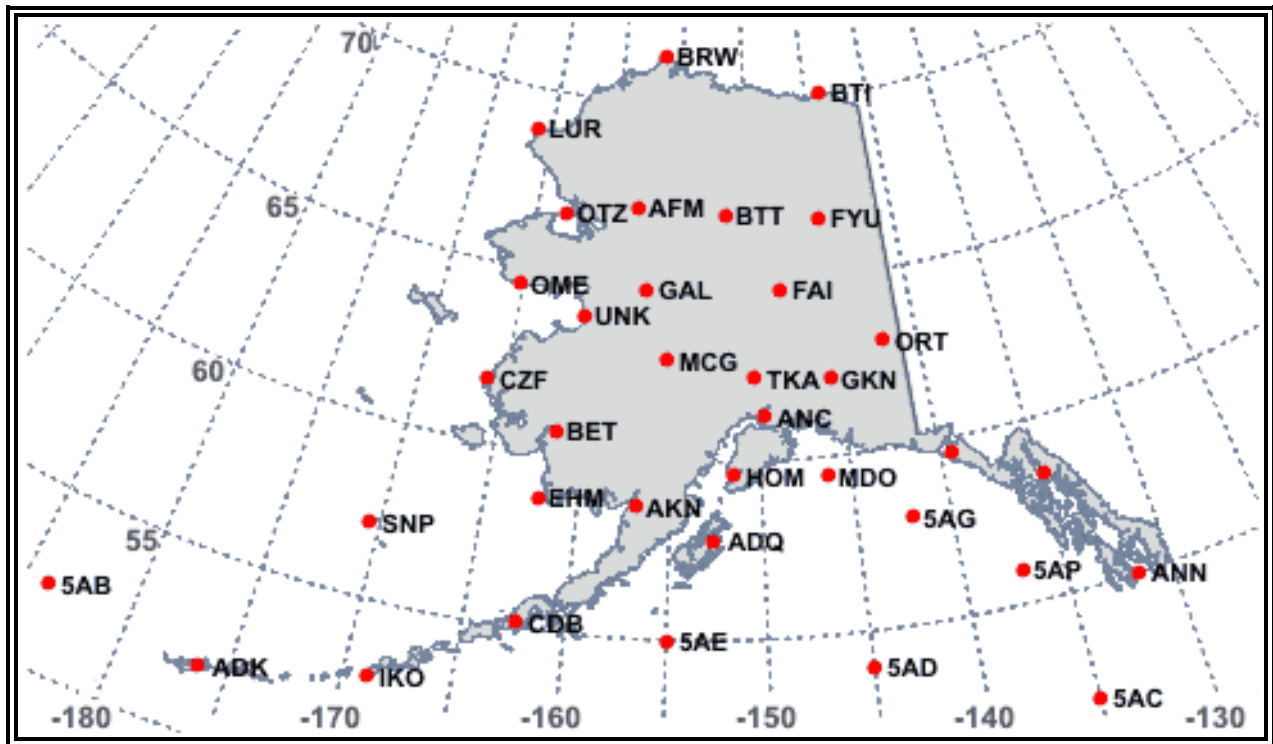


Figure 7-8. Wind and Temperature Aloft Forecast Network - Contiguous US



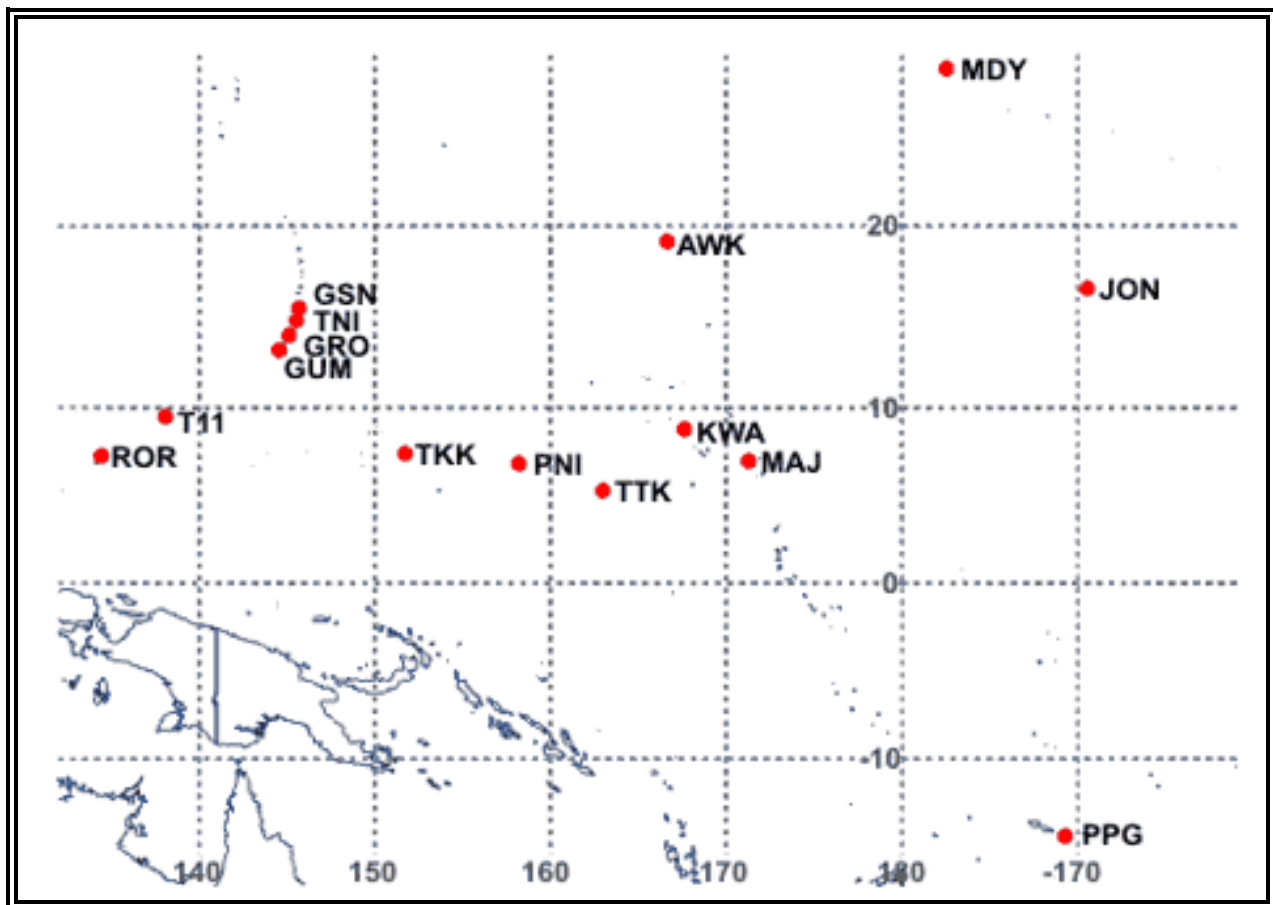


Figure 7-11. Wind and Temperature Aloft Forecast Network - Western Pacific

Table 7-11. Wind and Temperature Aloft Forecast (FB) Periods

Model Run	Product Available	6 hour Forecast		12 hour Forecast		24 hour Forecast	
		Valid	For Use	Valid	For Use	Valid	For Use
0000Z	~0200Z	0600Z	0200-0900Z	1200Z	0900-1800Z	0000Z	1800-0600Z
0600Z	~0800Z	1200Z	0800-1500Z	1800Z	1500-0000Z	0600Z	0000-1200Z
1200Z	~1400Z	1800Z	1400-2100Z	0000Z	2100-0600Z	1200Z	0600-1800Z
1800Z	~2000Z	0000Z	2000-0300Z	0600Z	0300-1200Z	1800Z	1200-0000Z

7.4.4 Delayed Forecasts

If the scheduled forecast transmission is delayed, the existing valid forecast based on the earlier 6-hourly data can be used until a new forecast is transmitted.